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THE DETERMINANTS OF EXECUTIVE PAY COMPONENTS, INCENTIVE PAY RATIO AND TOURNAMENT'S PAY STRUCTURE: THE UK EVIDENCE

By

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ABSTRACT

This thesis provides a review and empirical analysis of the determination of executive compensation components, long-term incentive pay ratios and the implication of tournament pay structures. The sample of 1,137 executive-year observations of comprehensive executive compensation packages from FTSE350 companies are exploited to advance our understanding of executive pay determination.

The meta-analysis in chapter three provides a systematic review of prior literature on the pay-performance relationship and indicates that the true association between executive pay and firm performance is positive. The economic significance of the relationship, however, is low with less than one percent of executive pay rise is directly attributable to the improvement in firm performance.

Chapter six examines the determinants of executive pay components and incentive pay ratios. The empirical results suggest that main determinants of executive pay components and incentive pay ratios are firm performance, firm size, executive tenure and the CEO position. The empirical results are sensitive to performance measures used in analysis.

Chapter seven provides some evidence supporting a tournament pay structure in the UK companies with strong connection between executive pay and organizational hierarchy. The convexity of the pay-position relationship implies that extra compensation weight is placed on the most senior executive compensation and the pay-gap is increasing over time. No evidence of the effect of the number of contestants on the tournament prize suggests the growing trend of hiring external CEO candidates rather than internal promotion.

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Chapter 1

INTRODUCTION

1.0 Introduction

Given the number of conferences and amount of column inches devoted to the subject of executive compensation, there is no doubt that executive pay is one of major topics of public concern in the late twentieth century and early 2000s. Public disquiet over the level of executive pay, which appears to have outstripped the rises in firm performance as well as average employees' remuneration, has risen considerably over the last decades. The concern over seemingly unjustified increases in executive pay has played an important part in the introduction of corporate governance reforms to the public policy agenda (Thompson, 2005). In the UK, the publication of The Cadbury Report (1992) and The Greenbury Report (1995) on directors' remuneration has led to attention being paid to the governance practices and pay-setting processes of UK companies. However, governance reforms have been less concerned with either the level of executive pay or the rate of executive-pay rise, but rather with the apparently weak relationship between executive pay and firm performance and a perceived lack of transparency about the pay-setting process. The efforts to establish standards and transparent pay-setting procedures that are independent of the beneficiaries appear to have had little impact on changing pay-performance sensitivities (Buck, et al., 2003; Girma, et al., 2007; Thompson, 2005).

Accordingly, executive compensation, its components, rate of pay rise, and the association with firm financial performance are still open for academic research. This thesis will provide a review and an empirical analysis of the determination of executive compensation components, long-term incentive pay ratios and the implication of tournament pay structures. Firstly, a meta-analysis of 43 prior empirical studies on pay-performance

relationship provides a systematical review of the true relationship between executive compensation and firm performance. The results of the meta-analysis indicate a positive association between the level of executive compensation and firm performance, despite the fact that the economic significance of the relationship is low. Secondly, comprehensive data on UK companies' executive remuneration allow thorough analyses of the determinants of executive pay components and determinants of incentive pay ratios with a number of firm performance measures. The determination of pay components and incentive pay ratios is analyzed from perspectives of both employer (cost of executive pay to company) and executives/employees (value of pay to executives). The distinguish between cost of pay and pay value to executive is expected to provide further understanding of the relationship between executive pay and firm performance. Finally, the thesis also explores alternative justification for the pay rise, i.e. tournament theory on executive compensation.

The purpose of this chapter is to introduce the research background; to clarify the objective and research questions of the thesis; and to briefly describe the expected contribution of the thesis. This chapter is structured as follows. Section 1.1 discusses the research background and motivation. Section 1.2 presents the objectives and research questions of this thesis. The expected contributions of this research are presented in section 1.3. Finally, section 1.4 outlines the structure of this thesis and summary of each chapter.

1.1 The Research Background

Corporate governance has received a great deal of attention from the academics and the public, especially following recent giant-corporate failures such as BCCI (1991), Barings Bank (1995), Enron (2001), WorldCom (2002) and Parmalat (2003). Given the potentially conflicting interests between managers and shareholders in modern corporations (Jensen and Meckling, 1976), most of the inquiries have focused on identifying governance mechanisms that may be employed to mitigate these conflicts. Corporate governance research has identified a variety of mechanisms to ensure that managers act in the best interest of shareholders. Board of directors is one of the mechanism that is viewed as 'essential monitoring device' to ensure that any problems arising from principal-agent relationships and opportunism are minimized. However, the "first-best" option is the "optimal contracting approach" that offers the manager an incentive compensation contract connected to firm performance. Under imperfect information, incentive compensation contracts based on outcomes can help to improve agency problems and align the interests of managers with those of shareholders (Holmstrom, 1979).

Bebchuk, Fried & Walker (2002) challenge the optimal contracting view from agency theory and suggest that executive-pay-setting process in publicly traded companies has strayed far from arm's-length model[1], which is a condition for optimal contract. Indeed, behaviors of directors and the board are also subject to agency problem, which undermine their ability to address effectively the conflict of interests between managers' and shareholders'. Directors generally wish to be re-appointed to the board, for attractive salary, prestige and valuable business and social connections; whilst executives (CEO) play an important role in re-nominating directors to the board. Directors, hence, have an incentive to

[1] Arm's-length bargaining model assumed that pay arrangements are the product of arm's-length bargaining. It is the bargaining between executives attempting to get the possible deal for themselves and boards seeking to get the best possible deal for shareholders.

favor the CEO and/or other executives in term of their pay arrangements. In addition, market forces are not sufficiently strong and fine-tuned to assure optimal contracting outcomes. For these reasons, Bebchuk & Fried (2004) suggest that executives have substantial influence over pay-setting process and their own pay that the greater is managers' power, the greater is their ability to extract 'rents' (arrangements that are substantially more favorable than those they could obtainable under effective arm's-length bargaining).

A survey by Murphy (1999) suggests that the evolving executive compensation literature has been truly interdisciplinary, spanning accounting, economics, industrial relations, law, organizational behavior, and strategy. Accountants, like Healy (1985), have studied the association between accounting based compensation incentives and earnings manipulation. Baiman and Verrecchia (1995) explore the relative effectiveness of accounting-based versus market-based performance measures. Financial economists have studied the relationship between executive compensation and company performance (Abowd, 1990; Coughlan and Schmidt, 1985; Jensen and Murphy, 1990; Leonard, 1990; Murphy, 1985; 1986; etc.). Financial economists have also investigated the effect of investment decisions, capital structure, dividend policies, mergers and diversification on executive compensation. Industrial economists have documented the effects of regulation and deregulation on executive compensation (Carroll and Ciscel, 1982). Furthermore, organizational behaviorists have examined social comparisons and the behavioral effects of wage dispersion (O'Reilly, et al., 1988; Tosi and Gomez-Mejia, 1989; 1994). Within this exploding interdisciplinary literature, the main concentration of prior research is determination of the level of executive compensation. However, despite a huge number of studies devoted to explaining the determination of executive compensation, there is continuing debate over the determinants of executive pay (Murphy, 1999), particularly surrounding underlying theory.

Within the theoretical debate over the determination of executive compensation, the dominant approach is agency theory, which, as discussed in preceding paragraph, argues for an optimal incentive contract linking executive pay to performance of the firm. Accordingly, the optimal incentive contract under agency theory suggests firm performance as the main determinant of executive compensation. However, agency research, while conceptually important, has produced weak or even statistically insignificant results on the relationship between executive pay and performance (Conyon and Leech, 1994; Gibbons and Murphy, 1990; Gregg, et al., 1993; Jensen and Murphy, 1990; Lambert and Larcker, 1987; Murphy, 1999). In contrast, managerial power perspective argues that executives use their power to extract rents and influence their own pay to the detriment of shareholders (Bebchuk and Fried, 2004). Tournament theory perspective (by Lazear and Rosen, 1981a), however, suggests that relative performance and rank-order in the organizational hierarchy are the most important determinants of executive compensation. The agency perspective, despite theoretical importance, might not fully explain the determination of executive compensation due to low economic significance of the pay-performance relationship from empirical research. Hence, it is likely that research examining alternative models from different perspectives may be more fruitful in explaining the level and the disparity of executive remuneration.

Moreover, although the number of published studies on executive compensation in the UK is far less than the number of research papers in the US, it is clear that the UK has been a pioneer in corporate governance reforms that seeks to address concerns over executive compensation. Thompson (2005) comments that many countries with emergent industrial systems have self-consciously adopted many of the principles and practices of the UK reports. The issue of executive pay determination has been a major element in UK governance reforms. The Cadbury Committee was set up in the UK in 1991 in response to the rapid increase in executive pay and supposed failure of pay to be linked to performance and also in response to a series of scandals involving Maxwell Communications, BCCI,

Polly Peck, etc. The publication of the Cadbury Report (1992), the Greenbury Report (1995), the Hampel Report (1998), the Directors' Remuneration Report Regulations (2002), the Higgs Report (2003) and the Combined Code (2003, 2006 & 2010) are important milestones in the process of ensuring greater transparency in the pay-setting process and improved accountability of UK boards of directors to their shareholders. Despite numerous changes in corporate governance, investors remain concerned that executives continue to be rewarded substantially even when company performance is poor. Specifically, Thompson (2005) and Girma et al (2007) documented little impact of a more standard and transparent pay-setting procedure on pay-performance sensitivities since the reforms. Hence, the pay-performance relationship still needs further investigation and research.

Among those studies on the pay-performance relationship, Devers et al (2007) have summarized and organized the relationships between executive pay and performance into two main categories: (1) the influence of performance on executive pay and (2) the influence of executive pay on performance. Researchers examining the influence of performance on executive pay generally depict compensation as a reward for prior performance, or as a means of *ex post* settling up (Fama, 1980). Scholars often refer this relationship as the sensitivity of pay to performance. Hall and Liebman (1998) concluded that the sensitivity of CEO compensation to firm performance has been increasing over time largely because of the explosion of stock options. On the other hand, scholars examining the influence of pay on performance conceptualize compensation as a motivational tool. However, considerable literature suggests that firm performance is not simply a function of managerial decisions and raised questions concerning the efficacy of executive compensation to adequately align the interest of managers and shareholders (Yermack, 1997; Devers *et al*, 2007).

1.2 Objectives of the thesis

Given the research background and research gaps presented in preceding paragraphs, this thesis seeks to examine the determination of executive compensation (pay components, pay ratios and the rate of pay rise) from alternative theoretical perspectives using comprehensive data from large UK companies. Although there have been vast numbers of prior studies concentrated on the determination of pay level, there have been relatively few investigations on the determinants of pay components and executive pay structure (except for Beatty and Zajac, 1994; Lewellen, *et al.*, 1987; Veliyath and Cordeiro, 2001). However, all these studies are on US data, there is virtually no study in the UK that examines the determination of executive pay elements and incentive pay ratio. To address the gap, this study provides an empirical analysis of the determination of executive pay components and incentive pay ratio (pay structure) in the UK.

Within the theoretical debate over the determination of executive compensation, agency theory suggests firm performance as the main determinant of executive compensation. This study concentrates on the influence of firm performance on executive pay, specifically on pay components and structure of executive pay. In contrast, the managerial power theory argues that executives use their power to extract rents and influence their own pay, which is not subject to firm performance. Alternatively, tournament theory suggests that the relative performance and the rank order in the organizational hierarchy are the main determinants of executive pay. The models that underpin the empirical analysis of this thesis will follow the arguments from these three perspectives. Although this set of theories is not exhaustive, the models based on these perspectives are prominent in their respective fields and each perspective has been the subject of extensive prior empirical work.

In sum, the main objective of this thesis is to undertake an empirical analysis of the determination of executive pay components and incentive pay ratio in the UK by contrasting agency theory perspective and the managerial power perspective; and by testing tournament theory in the context of executive compensation. The primary research questions for this study are:

1. What are the main determinants of components of executive compensation and incentive pay ratio in the UK?
2. Are the predictions of tournament theory held in the context of executive compensation in the UK?

1.3 Expected Contributions

This thesis seeks to improve knowledge of executive compensation by making the following contributions. The first major contribution is a detail empirical analysis of the determinants of components of executive compensation and ratios of pay components over total pay, mainly ratios of incentive pay components. To date, there is virtually no study in the UK that examines the determinants of executive pay components and incentive pay ratios. The conflicting empirical evidence of the relationship between executive compensation and firm performance may partly due to the inconsistent approach adopted by the extent literature regarding the definition of the pay variable. At first sight, research appears to define compensation in a fairly consistent manner; broadly defined as cash compensation, long-term incentives and total compensation. However, apart from precedence, the literature does not provide guidance for a precise measurement specification and subsequently studies use a wide variety of definitions that may influence the results. Most studies use one measure of compensation in the analysis and very few studies attempt

to measure more than just total compensation. More typically, there are no UK studies that examine the determination of incentive pay ratios, to date. Hence, this study examines the determination of the following measures of executive compensation: cash pay, long-term incentives, total pay, and the ratio of long-term incentives in total executive compensation.

Second, this study provides comprehensive measures of the executive compensation variables. The complication in measuring executive remuneration mainly relates to long-term incentive components, which are difficult to be calculated accurately at the grant date due to contingent performance conditions. Except for Buck et al (2003), most other UK studies use very simple estimation of the value of long-term incentives; say 20% of the face value of long-term incentive plans (hereby "LTIPs") (Conyon and Murphy, 2000; Conyon, et al., 2001). In this study, long-term incentives are estimated for each incentive at the grant date controlling for contingent performance conditions attached to the plans. Specifically, options and LTIPs are first evaluated their cost to company using the Black-Scholes valuation models. The actual values of options and LTIPs are then controlling for performance conditions attached to the incentives and subsequent vesting of such incentives.

Third, the thesis empirically tests the predictions of the tournament theory perspective in the context of executive compensation. Conyon et al (2001) conducted an empirical analysis testing the propositions of tournament theory in the UK using cross-sectional data with a simple estimation of long-term incentive pay. Conyon's et al (2001) study partly supported the propositions suggested by tournament theory. This study further tests the propositions of tournament theory using panel data and more comprehensive measures of long-term incentive pay to examine the validity of tournament theory in the context of executive compensation in the UK.

Fourth, this study controls for the possible effect on the valuation of executive compensation by differentiating the cost of compensation to the company and its value to the executives. Hall and Murphy (2000; 2002) argue that undiversified and risk-averse executives will generally place a much lower value on company stock options than would outside investors. In addition, the value of LTIPs is also much lower than its cost to the company due to the 'challenging performance criteria' (Greenbury, 1995) attached to the plans (i.e. LTIPs). The divergence between the cost and value of long-term incentives has implications for evaluating the incentives provided by executives' long-term incentive pay (Hall and Murphy, 2002). Hence, the relationship between executive pay and firm performance is likely to be affected by the use of the cost of long-term incentive pay to the company and its value to executive directors.

1.4 Structure of the thesis

In order to address the research questions and make the contributions listed above, the thesis is structured as follows. Chapter 2 presents the framework on corporate governance and executive compensation in the UK. The chapter discusses the importance of corporate governance in modern corporations and the recent developments of corporate governance in the UK. As part of the corporate governance reforms, the current framework on executive compensation in the UK is described next in the chapter. The purpose of this chapter is to address the provisions of corporate governance reforms on pay-setting process and the limitations in altering corporate behavior and performance. This chapter also provides a framework and justification for data collection in Chapter 5.

Chapter 3 reviews the theoretical arguments and empirical findings surrounding the determination of executive compensation. The chapter reviews alternative theoretical perspectives on the determinants of executive pay. In order to examine executive pay

components, Chapter 3 describes the structure of an executive compensation package with main components. Chapter 3 also reviews the determinants of each components of executive compensation package. The review of literature on the relationship between executive pay and firm performance, as suggested by agency theory, then follows. The review of the pay-performance relationship includes a narrative review of prior research and a meta-analysis. The meta-analysis contains 43 prior studies that report a correlation coefficient between executive compensation and firm performance. The meta-analysis provides a systematic review of the literature and allows researchers to correct for various statistical artifacts and to aggregate results across studies to obtain an estimate of the true relationship between variables.

In Chapter 4, alternative theoretical perspectives discussed in chapter 3 are utilized to derive a range of hypotheses. Specifically, agency theory and the managerial power theory are two main perspectives in deriving hypotheses on the determinants of executive pay components and incentive pay ratios. The tournament theory perspective is used to derive hypotheses on tournament pay structure in the context of executive compensation.

Chapter 5 describes the methodology utilized to test the presented research questions and derived hypotheses. The panel data analysis is described with both static panel data method (the fixed and random effects estimators) and dynamic panel data method (Arellano-Bond GMM estimator). The selection of the sample and description of the data set are presented next. This is followed by a description and justification of the variables used in the empirical analysis. The chapter also presents a descriptive analysis of variables, especially the description of executive compensation of the sample companies.

Chapter 6 and Chapter 7 present the results and analyses of the empirical tests examining the hypotheses developed in Chapter 4. In Chapter 6, the hypotheses relating to the determinants of executive pay components and incentive pay ratios are tested. The

results of the empirical analysis are presented for different components of executive pay: cash compensation, long-term incentives and total compensation. The results examining the determinants of incentive pay ratios are presented next. The comparison between the use of cost of pay to company and its value to executive is presented in each empirical result.

Chapter 7 presents the results of the empirical analysis examining the tournament theory in the context of executive compensation. The empirical results of the most important prediction of the tournament theory about the convex relationship between executive pay and organizational level are presented first. Other predictions of the tournament theory are tested next and the results are presented consequently.

In the final chapter (Chapter 8), the findings presented in the result chapters (Chapter 6 and Chapter 7) are summarized and reflected upon. The chapter also highlights the implications of the findings for policy makers and managers of public corporations. It also identifies weakness and shortcomings of this thesis and consequently avenues for future research.

Chapter 2
FRAMEWORK ON CORPORATE GOVERNANCE AND EXECUTIVE COMPENSATION IN THE UK

2.0 Introduction

Corporate governance has received a great deal of attention from academics, the media and the public at large in recent decades following recent giant-corporate failures, the spread of creative accounting and the pressures on increasing firm value in stock markets. Given the potentially conflicting interests of managers and shareholders in modern corporations (Jensen & Meckling, 1976), most of the inquiries have focused on identifying corporate governance mechanisms that may be employed by a firm to mitigate these conflicts. Accordingly, corporate governance research has identified a number of mechanisms to ensure management's action in the best interest of shareholders. This chapter provides an overview of corporate governance, executive compensation, its importance in modern corporations, and the current framework in the UK. The next section will describe the nature of the modern public corporation and the need for a good governance system. Section 2.3 describes governance framework in the UK with current legislations, regulations and practice adopted by companies. This section provides a summary of the development in corporate governance in the UK with details of influential reports such as the Cadbury Report, the Greenbury Report, the Hampel Report, the Higgs Report and the Combined Code. Section 2.4 centers on the regulations and framework on executive remuneration with more details of the Greenbury Report and the Directors' Remuneration Report Regulation. Section 2.5 will conclude the chapter and its contribution and implication for the thesis as a whole.

2.1 The Nature of Public Corporation and Importance of Corporate Governance

A central feature of the public corporation is the separation of ownership and control, which was first described by Berle and Means (1932). Shareholders are the owners of the public corporation; however, the effective control of the firm belongs to the managers, who are not normally the owners. The shareholders invest their money and get a chance to participate in the profits of the corporation without taking responsibility for the operations. The management gets a chance to run the company without taking responsibility for personally providing the funds. The four characteristics essential to the vitality and appeal of the corporation are: limited liability for shareholders; free transferability of shareholders' interests; legal personality; and centralized management. (1) A *limited liability* means that the corporation is separate from its owners and employees. What is owed to the corporation is not owed to the individuals who made up the corporation; and what the corporation owes is not owed by the shareholders. Hence, if a corporation goes bankrupt and is sued by its creditors, the shareholders and individual members of the corporation are not individually liable. (2) *Transferability* is the ability to transfer one's shareholding freely, which is jus as important as limited liability in achieving an acceptable level of risk. (3) *Legal personality* means that a corporation is a legal entity having legal rights and obligations that are distinct from those of its owners. Corporation lives on for as long as it has capital, i.e. perpetual existence. (4) *Centralized management* is another aspect of the limited authority given to shareholders. In order to allow the company to operate with maximum efficiency, the shareholders give up the right to make decisions on all but the most general issues facing the company. In a corporation, the power to determine the company's overall direction is given to the board of directors and the power to control its day-to-day operations is given to the managers.

That corporate form with the central feature of separation between ownership and control is the source of agency problems (Jensen and Meckling, 1976). Jensen and Meckling

suggest that managers (agent) have a chance to consume corporate resources and to act opportunistically for their own benefit to the detriment of shareholders (principal). Agency theory also asserts that firms can employ various mechanisms to align the interest of agents and principals, and to monitor the behavior of agents. In the context of corporations and issues of corporate control, agency theory views corporate governance mechanisms, especially the board of directors, as being an 'essential monitoring device' to ensure that any problems arising from principal-agent relationships and opportunism are minimized (Mallin, 2004). Corporate governance is defined by the Cadbury Report (1992) as 'the system by which corporations are directed and controlled' (para 2.5) to ensure the maximization of shareholders' wealth.

The topic of corporate governance has also attained enormous practical importance for at least the following reasons. First, the efficiency of the existing governance mechanisms in advanced economies has been the subject of debate, especially following giant-corporate failures of BCCI (1991), Barings Bank (1995), Enron (2001), WorldCom (2002); Parmalat (2003), etc. Corporate governance is a major topic of public concern with the allegation that the internal mechanisms of corporate governance have not performed their job. The level of executive remuneration has also been the subject of public concerns, particularly over its efficiency and appropriateness. Second, there is an ongoing debate on the relative efficacy of the corporate governance systems in the US and UK (typified by dispersed shareholding and a prominent role of the secondary market of shares) and the corporate governance systems in Japan and Germany (typified by more concentrated shareholdings and a prominent role for banks). With the new and emerging market economies seeking to implement the 'right' corporate governance system, this debate has attracted serious attention from finance and legal scholars. Third, there is an apparent departure of the current practice of corporate governance from the legal provisions which accord the board control over management. The basic principle of corporate governance is that the shareholders elect the board of directors who in turn select top management.

However, the common practice is for the board to be elected by the shareholders from the slate approved by the top management.

2.2 Corporate Governance Practice in the UK

Corporations in the UK work within a governance framework, which is set by (1) legislation particularly the Companies Acts; (2) regulations emanating from the regulatory bodies to which they are subjects (such as the listing rules for listed companies); and (3) the Combined Code, which contains general principles and more details provisions and recommendations relating to the governance of listed companies (Chambers, 2003). The Company Acts are the UK law regarding the responsibilities, operations and governance of companies. The legislation is enacted by the Companies Act 1985 (with amendments by the Companies Act 1989), which consolidates various pieces of company legislation in the UK. The company law in the UK was reformed by the Companies Act 2006, which amended almost all of the Companies Act 1985 and introduced many reforms with various new provisions for private and public companies; but most of its provisions are not yet in force[2]. Under the UK company law, shareholders have comparatively extensive voting rights, including the rights to appoint and dismiss individual directors and, in certain circumstances, to call an Extraordinary General Meeting of the company. Certain requirements relating to the Annual General Meeting and requirements for information to be disclosed in the annual reports and accounts are also set out in company law. This framework is reinforced by the Listing Rules, the regulations that must be followed by companies listed on the Main Market of the London Stock Exchange. The Listing Rules provide further rights to shareholders and require certain information to be disclosed to the market. The legislation and regulations are straightforward and carry known penalties if companies contravene them. The Combined Code, however, operates on the basis of 'comply or explain'. The Combined Code

[2] It was intended that all parts of the Act would be in effect from October 2008, but this has now been delayed until October 2009

indentifies good governance practices relating to, for example, the role and compositions of the board and its committees and the development of a sound system of internal control, but companies can choose to adopt a different approach if that is more appropriate to their circumstances. Where they do so, however, they are required to explain the reason to their shareholders. In sum, the UK has developed a market-based approach to corporate governance that enables the board to retain flexibility in the way in which it organizes itself and exercises its responsibilities, while ensuring that it is properly accountable to its shareholders.

- **The Development**

The development of corporate governance in the UK has its roots in a series of corporate collapses and scandals in the late 1980s and early 1990s, including the collapse of the BCCI bank and the Robert Maxwell pension funds scandal in 1991. The UK business community recognized the need to put its house in order. And this led to the setting up in 1991 of the Committee on the Financial Aspects of Corporate Governance, chaired by Sir Adrian Cadbury, which issued a series of recommendations - known as the Cadbury Report - in 1992. A requirement was added to the Listing Rules of the London Stock Exchange that companies should report whether they had followed the recommendations or, if not, explain why they had not done so. In 1995, the Greenbury Report set out recommendations on the remuneration of directors. In 1998, recommendations of the Cadbury and the Greenbury reports were re-examined by the Hampel review and all brought together in the Combined Code (1998). In 1999, the Turnbull report was issued to provide directors with guidance on how to develop a sound system of internal control. Following the Enron (2001) and WorldCom (2002) scandals in the US, the Combined Code was updated in 2003 to incorporate the Higgs Report's recommendations on the role and independence of non-executive directors and the Smith Report's recommendations on the role of audit committee. The Financial Reporting Council (FRC), who has responsibility for publishing and

maintaining the Code, made further limited changes to the Combined Code in 2006. Throughout all of these changes, the 'comply or explain' approach first set out in the Cadbury Report has been retained. Summary of the Reports and the Code follows.

- **The Cadbury Report (1992) and the Code of Best Practice**

The Cadbury Report, formally entitled 'The Report of the Committee on the Financial Aspects of Corporate Governance', was published in December 1992 following the recommendations of the Cadbury Committee. The Committee was set up in May 1991 by the Financial Reporting Council, the London Stock Exchange, and the accountancy profession to address the financial aspects of corporate governance. As such the Committee addressed the financial aspects of corporate governance and subsequently produced a Code of Best Practice, the provisions of which, in their belief, all boards of UK listed companies should comply with. The Committee has made clear that the Code is to be followed by boards in light of their own particular circumstances. They are responsible for ensuring that their actions meet the spirit of the Code and in interpreting it they should give precedence to substance over form. The Committee, specifically, recommended that listed companies should incorporate a formal statement into their Report and Accounts outlining whether or not they complied with each of the Code's provisions. Further to this, the Report recommended that the compliance statements made by the companies should be reviewed by auditors prior to release of the Annual Report.

The key focus of the provisions of the Report is primarily related to the composition of the board of directors, the appointment and independence of non-executive directors, the service contracts and remuneration of executive directors, and company's financial reporting and controls. Regarding (1) *the board of directors*, the Code recommends that the board should meet regularly to retain full and effective control over the company and monitor the executive management. The Report recommends a clearly accepted division of

responsibilities at the head of the company to ensure the balance of power and authority, specifically the separate role of chairman and chief executive officer. The board should also include non-executive directors of sufficient calibre and number, i.e. a balance in the board of directors, for their views to carry significant weight in the board's decisions. (2) *Non-executive directors* should bring an independent judgment to bear on issues of strategy, performance, resources, key appointments, and standard of conduct. The majority of non-executive directors should be independent of management and free from any business or other relationships which could materially affect their independent judgment. Non-executive directors should be appointed for specific terms and the reappointment should not be automatic. (3) There should be full and clear disclosure of *directors' remuneration* and those of the chairman and highest-paid UK director, including pension contributions and stock options. Separate figure should be given for salary and performance-related elements and the basis on which performance is measured should be explained. Executive remuneration should be subject to the recommendations of a Remuneration Committee made up entirely or mainly of non-executive directors. And service contract for directors should not exceed three years without shareholders' approval. (4) For *reporting and control*, the board should establish an Audit Committee of at least three non-executive directors with written terms of reference which deal clearly with its authority and duties. The board should ensure that an objective and professional relationship is maintained with the auditors. The directors are responsible for reporting on the effectiveness of the company's system of internal control and the going concern of the business.

Although the Cadbury *Code of Best Practice* was formally voluntary, it is endorsed by the London Stock Exchange to ensure high levels of compliance by introducing requirements into the Listing Rules requesting all companies to include a statement of compliance, or non-compliance, with the provisions in their Annual Report and Accounts. Furthermore, institutional investors and investment banks urged those listed companies for which they provided sponsorship and advice to adopt the provisions. As a result, many

companies changed their governance procedures and conduct accordingly. A survey by Conyon (1997b) suggests that majority of large UK companies have implemented the Code's proposals very rapidly.

- **The Greenbury Report (1995)**

The Greenbury Committee was set up in 1995 in response to the issue of director's remuneration, which was becoming a primary concern for investors and public at large during 1990s. It was recognized that corporate governance issues relating to director's remuneration needed to be addressed in a more rigorous manner. And the Committee's terms of reference is to identify good practice in determining director remuneration and prepare a Code of such practice for use by UK PLCs. The Committee's findings were then documented in the Greenbury Report, which incorporated a Code of Best Practice on Director's Remuneration. There are four main issues were dealt with: (1) the establishment, membership and role of a Remuneration Committee in setting the remuneration packages for the CEO and other directors; (2) the required level of disclosure and approval of the details of directors' remuneration policy; (3) specific guidelines for determining a remuneration policy for directors; and (4) the length of service contracts and provisions binding the company to pay compensation for directors, particularly in the event of dismissal for unsatisfactory performance. Further details of these recommendations and provisions are provided in the executive remuneration framework section.

The proposals contained in the Greenbury Code are designed to ensure that directors' remuneration is linked to individual performance and that there is greater accountability and transparency in the determination of levels of remuneration. Following publication, the Greenbury's recommendations were also taken on board by the London Stock Exchange and incorporated into the UK Listing Rules. However, unlike the Cadbury Code, it was not widely accepted as many believed that the recommendations made did not

sufficiently deal with the issue of linking director's pay to company performance in the interests of shareholders. Moreover, the Report was concerned with the process of determining remuneration, not the level of remuneration itself; and thus it was felt that its recommendations may not ease public concerns over the high levels of directors' remuneration.

- **The Hampel Report (1998)**

The Hampel Committee was established in 1996 to review and revise the earlier recommendations of the Cadbury and Greenbury Committees with the intention of creating an overall code of corporate governance. The Hampel Report, which is subsequently published in 1998, emphasis on the board principles of good corporate governance, rather than detailed guidelines and rules as in the Cadbury and Greenbury Codes, in order to reduce the regulatory burden on companies and avoid 'box-ticking' so as to be flexible enough to be applicable to all companies. It was recognised that good corporate governance will largely depend on the particular situation of each company. The Hampel's recommendation is "company should include in their annual report and accounts a narrative statement of how they apply the relevant principles to their particular circumstances" (para 2.1, p.16).

The Hampel Committee viewed corporate governance from a strict agency perspective, i.e. corporate governance as an opportunity to enhance long term shareholder value. This was a new development from the Cadbury and Greenbury Codes which had primarily focused on preventing the abuse of the discretionary authority entrusted to management. In particular, the Report favoured greater shareholder involvement in company affairs. For example, the Report recommended shareholders, particularly institutional shareholders, to adopt a 'considered policy' on voting. Another key advance was in the area of accountability and audit. The board was identified as having responsibility to maintain a sound system of internal control, thereby safeguarding shareholders' investments (although

the board was not required to report on the effectiveness of the controls). Further, the board was to be held accountable for all aspects of risk management, as opposed to just the financial controls as recommended by Cadbury. The Hampel Committee, however, did not advance the debate on director's remuneration, choosing only to reiterate principles inherent in Greenbury. In particular, the Hampel Committee did not believe that directors' remuneration should be a matter for shareholder approval in general meeting. This would not become a requirement until the introduction of The Directors' Remuneration Report Regulations in 2002.

In sum, the Hampel Report made recommendations on improving communication with shareholders, and redressing the balance between implementing controls, and allowing companies to find their own ways of applying corporate governance principles. The Committee also consolidated the recommendations of the two previous reports (Cadbury and Greenbury) and recommended the creation of a 'Combined Code' which was annexed to the Listing Rules. Details of the Combined Code will be discussed in the following section.

- **The Combined Code (1998)**

The Combined Code consolidated the principles and recommendations of the Cadbury, Greenbury and Hampel reports. It was formulated in 1998 and revised in 2003 following the publication of the Higgs report. The Code is divided into two sections. The first section outlines principles of best practice and their supporting provisions for companies, while the second section does the same for shareholders. While compliance with the Code is not mandatory, the Code was appended to the listing rules, which requires a statement by companies to provide shareholders with sufficient information to be able to assess the extent of compliance with section one of the Code. Instances of non-compliance should be justified to shareholders.

Section 1 of the Code is comprehensive covering topics such as the composition and operations of the Board, directors' remuneration, relationship with shareholders, the supply of information, and accountability and audit. The fact that the Code has provided both principles and provisions has resulted in a Code that is powerful enough to effect specific recommendations and flexible enough to be applicable to most companies.

Section 2 of the Code is much shorter, covering shareholder voting, dialogue with companies and the evaluation of governance disclosures. As institutional investors invest on behalf of the shareholders they represent, they have a responsibility to hold the companies in which they invest to account. In particular, the Code recognised that the responsibility for maintaining good dialogue and mutual understanding belongs to both companies and its institutional investors. Finally when evaluating the quality of governance disclosure by companies, institutional investors are to give due weight to all relevant factors. This is rather vague and the area has been recognised as a shortcoming of the Code, leading to membership associations of institutional investors having to produce guidance to its members on this area.

- **The Turnbull Report (1999) – Internal Control**

A working party led by Nigel Turnbull, was established to develop guidance for directors on the internal control principle and provisions within the Combined Code[3] and provide assistance for companies in reporting how they had applied the Combined Code and its principles to shareholders in the annual reports and accounts. The Turnbull Report, which was published late 1999, based on high-level principles of good governance rather than rules or detailed checklists. The Report's main recommendations were:

[3] Code Principle:
'The board should maintain a sound system of internal control to safeguard shareholders' investment and the company's assets'

- The board should conduct an annual review of the effectiveness of the company's internal control system and should report to shareholders that they have done so.
- There must be embedded monitoring process for the review of internal control on a continuous basis
- The board should take a risk-based approach to the review. The board should consider what the significant risks are and assess how they have been identified, evaluated and managed. The board should also assess the effectiveness of the related system of internal control in managing the significant risks.
- The review should cover all significant aspects of internal controls, including financial controls, operational controls, compliance control, and risk management.
- The board, not operational managers, is responsible for risk management and internal control; and also takes responsibility for the disclosures on internal control in the annual report and accounts.
- The board should annually review the scope of work, authority and resources of the internal audit function
- Companies who do not have an internal audit function should assess the need for one annually

In July 2004, the Financial Reporting Council (FRC), chaired by Douglas Flint reviewed the Turnbull Report. The FRC published updated guidance in October 2005, which applied to financial years beginning on or after 1 January 2006. Minor changes were made which included: (1) a new preface has been added to encourage companies to keep their application of the guidance under review and to provide shareholders with more meaningful information in their annual statement; and (2) clarification that directors will be expected to

apply the same standard of care when reviewing internal controls as when carrying out their general duties.

- **The Higgs Report (2002) – Non-Executive Directors**

The Higgs Review (2002) on the role and effectiveness of non-executive directors (NEDs) further develops the UK framework on corporate governance. This review was led by Derek Higgs and begun in April 2002, with the final report published in January 2003. The Report recommended a number of changes to the Combined Code for NEDs to take on a more demanding and influent role on company boards. It examined the role, independence and recruitment of non-executive directors. Higgs viewed the non-executive director's *role* as: making contributions to corporate strategy; monitoring the performance of executive management; satisfying themselves regarding the effectiveness of internal control; setting the remuneration of executive directors; and being involved in the nomination, removal and succession planning of senior management. The *independence* of NEDs had been mentioned in the Combined Code with recommendations that board should comprise of at least one-third of NEDs and a majority of whom should be independence. However, the Code did not detail how to assess independence. Therefore Higgs outlined a series of tests of independence such as length of service (10 years), associations to executive management, financial interest or significant shareholding. In particular, cross-directorships were identified as compromising independence, the simplest case being where two directors act as executive directors and non-executive directors alternatively at two companies. However, in practice there may be a complicated network of inter-relationships known as, 'an old boy's club' such that it remains difficult to externally determine a directors' independence. With regard to *recruitment*, the Higgs Report recommended stronger provisions governing nomination committees. Higgs called for all listed companies to establish a nomination committee, chaired by an independent NED (not the Chairman) and comprising a majority of

independent non-executive directors. Other important recommendations of the Higgs report included:

- The Board should review its performance, the performance of its committees and individual directors at least once a year;
- The Company Secretary should be accountable to the Board through the Chairman on all governance matters; and
- The terms of reference of the remuneration committee should be published.

- **The Smith Review (2003) – Guidance on Audit Committees**

An independent group, chaired by Sir Robin Smith, convened in January 2003 to clarify the role and responsibilities of audit committees. The report was published in July 2003. The main recommendations are:

- The audit committee should comprise of at least three members, all members should be independent NEDs
- Audit committee member should have significant, recent, and relevant financial experience
- Suitable and timely training should be provided to committee members

Recommendations on the role of the audit committee were to monitor the integrity of the financial statements, review the internal financial control systems, monitor the internal audit function, make recommendations to the board on external auditors, appointment, and monitor and review the performance and independence of external auditors. The recommendations are appended to the Revised Combined Code (2003).

- **Revised Combined Code**

The revised Combined Code, published in July 2003 was a direct result of the recommendations of the Higgs report and the Smith review as outlined above. The revised Combined Code aims to achieve more open and rigorous procedures for the appointment of directors and improved induction and development of NEDs. As with the 1998 Combined Code, the revised Code also takes a 'comply or explain' approach to encourage best practice in corporate governance. Companies are required to report on their compliance against the Code and should explain areas of non-compliance. The revised Code amounts to a significant revision of the 1998 Code. In particular, the Code calls for:

- A separation of the roles of the Chairman and Chief Executive. The Chairman should satisfy the criteria for independence on appointment, but should not, thereafter, be considered independent when assessing the balance of board membership;
- A board of at least half independent NEDs. The Code defines independence as recommended by the Higgs Report;
- Candidates for board selection to be drawn from a wider pool;
- The board, its committees and directors to be subject to an annual performance review;
- At least one member of the audit committee to have recent and relevant financial experience; and
- The Code permits the chairman to chair the nomination committee, which is in contrast to the Higgs Report, except where the committee is considering the appointment of the chairman's successor.

Following the revised Combined Code, there are a number of other reports that further develop the corporate governance in the UK. Tyson report on the recruitments and development of non-executive directors was commissed in late 2003. In December 2004 the Government launched the code '*Building better boards*' to develop diversity in boardrooms. Good governance code for the voluntary and community sector was published in June 2005 to maintain and enhance public confidence in organisations. In July 2005, the FRC announced a review of the implementation of the Combined Code and a number of changes were incorporated in the revised Combined Code, published in July 2006, which supercedes and replaces the 2003 Code.

Corporate governance practice in the UK, with the Combined Code, number of reports and recommendations, sets out best practices to guide companies, on a 'comply or explain' basis, in applying their own corporate governance system. This corporate governance framework and practice aim to enhance the accountability and responsibility of the board in monitoring management and align their interests with those of shareholders. The following section describes in more details current framework of executive remuneration in the UK and the use of incentive contract in aligning the interest of shareholders and managers.

2.3 Executive Remuneration Framework in the UK

As noted in the last section, the issues of executive remuneration are first discussed and recommended in the Cadbury report. Although only three (out of nineteen) of Cadbury's recommendations directly concern executive remuneration, the Cadbury report advocated a sharp break with traditional UK corporate practice in compensating executive directors. Particularly, the total remuneration of directors and that of both the chair and the highest paid UK director were to be fully disclosed, with a breakdown of the base salary and performance-based elements and an explanation of the basis on which relevant performance

is measured. The pay of executive directors was to be determined by a remuneration committee, which was to be comprised wholly or mainly of non-executive directors. Directors' service contracts were not to exceed three years. In sum, the Cadbury report sought to make the pay determination process more transparent, more accountable, and less subject to executive influence and by setting up an institutional device that could relate compensation to the firm's circumstances.

The Greenbury Report (1995) further develops the framework on executive remuneration with a number of recommendations and provisions incorporated in the Code of Best Practice on Director's Remuneration. The provisions are mainly on the remuneration committee; determinants, disclosure and approval of remuneration policy; and service contracts for directors.

- **Remuneration Committee**

The Greenbury Report recommends that all public companies should establish a remuneration committee and that any company choosing to ignore this advice should be required to explain why and, in its annual report, outline the alternative arrangements which have been put in place. The remuneration committee should be given clearly defined terms of reference and be a formally constituted committee of the board of directors, with full responsibility for all matters relating to executive pay. The responsibilities of remuneration committee should include: determining of company-wide policy on remuneration; determining of individual remuneration packages for each executive director; and reporting directly to shareholders on behalf of the board of directors on all matters relating to executive remuneration. Furthermore, the remuneration committee should consist exclusively of non-executive directors with no personal financial interest, no potential conflicts of interest arising from cross-directorships, and no day-to-day involvement in running the company. The fees of non-executive directors should be determined by the whole board. The remuneration committee should consult the company's chairman and CEO

about their proposals and have access to professional advice inside and outside the company in determining policy on executive remuneration and specific remuneration packages. Remuneration committee chairman should attend the company's Annual General Meeting to account directly to the shareholders.

The Greenbury Committee rejects the suggestion that remuneration committees might include independent members from outside of the company. Its reasons are that remuneration committee members need to be fairly knowledgeable about all aspects of the company, as well as particularly knowledgeable about the executive jobs they are assessing and the performance of the executives who fill those jobs, including their contribution to the overall success of the company. Greenbury argues that individuals whose only link with the company is through membership of the remuneration committee could not "realistically fulfil these conditions". However, it is questionable whether the argument is quite one-sided as the Greenbury suggests. It might be argued that the Greenbury underplays the relative contribution that independent specialists might make. For example, where someone is very knowledgeable about salary developments across industry generally, this might more than compensate for a lack of detailed knowledge about the company's operations. These issues have been resolved and clearly defined in the Higgs Report (2002).

- **Disclosure and approval provisions**

The Greenbury report argues for full disclosure of information on all aspect of remuneration for executive directors. The remuneration committee should produce a report, which forms part of or be annexed to the company's annual reports and accounts, each year to the shareholders on behalf of the Board. The report should set out the company's policy on executive directors' remuneration including levels, comparator groups of companies, individual components, performance criteria and measurement, pension provision, contracts of service and compensation commitments on early termination. The report should also

include full details of all elements in the remuneration package of each individual director, such as basic salary, annual bonuses, benefits in kind, and long-term incentive schemes including share options. Share holdings and other relevant business interests of the directors should also be disclosed. All new long-term incentive schemes (including share options schemes) for directors and senior executives, which potentially commit shareholders' fund over more than one year or dilute the equity, should be approved by shareholders.

On the question of share options, nothing less than full disclosure of all details is advocated, since the precise value of such schemes is difficult to estimate. The Greenbury Committee calls for the full disclosure of the number of shares under option at the beginning and end of the accounting period under review, as well as the number of options granted, exercised or lapsed during the period, the exercise date and price of all options, the dates on which options last lapsed, the market price of the share on the exercise date and a summary of the performance criteria on which the exercise of each option is conditional. Finally, the present value of pension entitlements earned during the year should be disclosed for each director in the remuneration committee's report.

- **Remuneration policy**

The Greenbury Committee recognizes that the market for executive talent is imperfect and therefore that the remuneration committee will need some latitude in determining the actual levels of remuneration. However, the remuneration committee should provide the packages just needed and sufficient to attract, retain and motivate directors of the right calibre but should avoid paying more than necessary for this purpose. In determining what the appropriate salary level should be for its senior executives, the remuneration committee should judge where to position their company relative to other companies. They should be aware what other comparable firms are paying, what their performance records are and how performance and remuneration are linked in such firms. Drawing up the comparator

group is itself important since the companies in it have to be similar in all respects to the company in question. Linking part of executive remuneration to firm performance is seen as one way to align the interests of executive directors with those of shareholders. It is for the remuneration committee to determine how the remuneration packages for each of the senior executives should be divided between fixed elements (i.e. basic salary, pension rights and benefits in kind) and variable elements (i.e. annual bonuses, share options and other long-term incentives); and the breakdown of the latter into annual bonuses and long-term incentives, including share options.

Although the Greenbury Report sees a role for both annual bonuses and long-term incentive schemes in encouraging and rewarding executive performance, it recognizes that the balance between the two is likely to differ from one company to another. It argues the need to base annual bonuses on some financial or operational yardstick that is "relevant, stretching and designed to enhance the business". Annual bonuses should never become just another guaranteed element in remuneration. Furthermore, the Report also recommends that if bonuses are paid partly in the form of shares, then these should be held for some specified minimum period of time. Likewise, long-term incentive schemes - including share option schemes -should only be payable if stringent performance criteria are met. These criteria should truly measure some aspect of company performance relative to a group of comparator companies, and should not simply reflect general trends in inflation or stock market prices. According to the Greenbury, executive share option schemes should be phased over a period of time rather than granted in large blocks. They should never be granted at a discount to the price prevailing at the time of issue and should not be exercisable in less than three years. The Greenbury Committee is in favour of long-term incentive schemes other than share option schemes, believing that these other schemes might be more effective in ensuring that rewards are linked to performance and in encouraging directors to build up shareholdings. The rewards under these other schemes could still consist of shares which would be automatically payable so long as the performance criteria are met. The beneficiary would not

have to sell any of the shares in order to meet the purchase price because the shares are paid as of right and no price is involved, although even under such schemes the recipient of shares might have to sell some of them in order to meet the tax payment on them. Therefore, such schemes might be more effective in encouraging directors to build up shareholdings in the company, thereby aligning their interests with those of shareholders.

- **Service Contracts and Compensation**

The Greenbury Report notes that the large compensation payments to directors in early 1990s are in part the result of the length of the service contract, which is often for a period of three years and on a rolling basis. While accepting the need for flexibility - for example, in the case of a newly appointed director - the Greenbury Report recommends that contract periods should be reduced to one year only. In the case of contract termination, the final settlement will be the result of negotiation, which will reflect the reasons for the termination. The Greenbury is adamant that poor performance should not be rewarded; also, that executives should be expected to mitigate their losses when their contracts are discontinued.

Clearly, the Greenbury Report is an important document setting out framework of the remuneration policy for executive directors. It covers main issues in the establishment and status of remuneration committee, the determinants of remuneration policy for executive directors, the disclosure and approval of the details of remuneration policy, and the length of service contracts and compensation for directors.

- **The Directors' Remuneration Report Regulations 2002**

The Directors' Remuneration Report Regulations 2002 ("the Regulations") required quoted companies to prepare a Director Remuneration Report ("the Report"), which complies with the Regulations, for each financial year containing specified information, some of which required to be audited. The Regulations came into effect from 1 August 2002 to replace the Company Act's 1985 regulations on director's remunerations and be effective for financial years ending on or after 31 December 2002. The Regulations require the company to send the Report to shareholders for approval by ordinary resolution at the Annual General Meeting. Failure to comply with the Regulations is a criminal offence. Generally, the Regulations provide a framework which assists shareholders to assess how well remuneration for executive directors is governed by the board. The shareholder vote on a company's remuneration report, which includes the forward looking statement of policy, provides the board and its remuneration committee with an annual signal as to how strongly its intended policy and its actual practice in the past year are supported by its shareholders. The Report thus strengthens the disclosure requirements previously set out in the Greenbury Report.

Overall, the framework on executive remuneration in the UK has concentrated on the transparency and standardization of the pay-setting processes that are independent of the beneficiaries. The framework, however, does not address the pay-setting processes themselves and has no direct implication to pay-performance sensitivity. Hence, the room for academic research on executive compensation in the UK is still widely open despite the well-set framework on executive pay.

2.4 Conclusion

Corporate governance is an important aspect in the modern corporation following the separation of ownership and control. It is a crucial device in aligning the interests of managers with those of shareholders. Overall, corporate governance in the UK is set by legislation, regulations, and the Combined Code, a guidance that contains general principles, provisions and recommendations for best practice. The Code operates on the basis of 'comply or explain', which requires the companies to report whether they have followed the Code or, if not, explain why they have not done so. The base of the Combined Code is the Cadbury Report, which addresses the financial aspects of corporate governance and subsequently produced a Code of Best Practice. Subsequently, the Greenbury and the Higgs Report further developed the provisions and guidelines set by the Cadbury Report on specific area, executive remuneration and non-executive directors.

The framework on executive remuneration is set by the Cadbury Report, the Greenbury Report and subsequently the Directors' Remuneration Report Regulations 2002. These Reports and regulations set out a framework to enhance the transparency of pay-setting process with strict requirements on disclosures of executive compensation for listed companies. The framework on executive compensation in the UK concentrates more on standardizing the pay-setting processes rather than the processes themselves, the level of executive compensation and sensitivity between executive remuneration and firm performance.

Generally, the corporate governance and executive remuneration framework in the UK follows a market-based approach that enables the board and the company to retain flexibility in the way in which it organizes itself and exercises its responsibilities, while ensuring that it is properly accountable to its shareholders. The flexibility allows companies

to set out its own pay-setting procedures and rewards their executives in its own way. This flexibility, however, causes diversion between companies in term of relating their executive compensation with firm performance. The next chapter will describe the structure and characteristics of executive compensation in UK companies and review of literature on pay-performance relationship in the UK.

Chapter 3
EXECUTIVE COMPENSATION: A REVIEW OF LITERATURE

3.0 Introduction

The framework for corporate governance and executive compensation, as set out in the Chapter 2, has provided guidance and also regulations on executive compensation practice in public listed companies. However, the framework and its Code of best practice are more concerned with formalizing the process of determining executive remuneration, rather than the level of remuneration itself. While its recommendations concerning transparency and disclosure are welcomed, it did not materially ease public disquiet over the high levels of executive remuneration. The level and determinants of executive remuneration are major topics of public concern and the subject of a huge number of studies from different perspectives. This chapter will provide a review of prior literature from different views on the level and determination of executive compensation. Section 3.1 presents a review of major theories and perspectives on the determinants of executive compensation. Three main theoretical perspectives (agency theory, managerial power theory, and tournament theory) are presented and discussed in line with other influential perspectives. Section 3.2 describes the structure of a remuneration package for executive directors, the characteristics and measurement of its components. This provides guidance for subsequent investigation on the determinants of executive compensation. Section 3.3 presents a review of literature on the determinants of executive pay. The review has three parts: (1) a narrative review of prior literature on the relationship between executive compensation and firm performance as well as firm size; (2) a statistical review (meta-analysis) of literature on the pay-performance relationship; and (3) a review of the literature on other determinants of executive compensation. The meta-analysis provides a statistical review, allows for the aggregation of results from prior empirical studies to obtain an estimate of the true relationship between

executive compensation and firm performance. Finally, Section 3.4 provides a summary and conclusion.

3.1 Theoretical Perspectives on Executive Compensation

Executive compensation has been approached from different perspectives in the academic literature. The dominant approach to the studies of executive compensation among academics is the "optimal contracting approach", an agency perspective (by Jensen and Meckling, 1976). According to agency theory, in order to align the interests of the managers with those of shareholders, the optimal contract should be in form of an incentive compensation contract that links managers' remuneration to firm performance. This approach suggests a positive relationship between executive pay and firm performance. However, Bebchuk, Fried & Walker (2002) with their managerial power perspective (or rent capture view) argue that executives use their power to extract rents and influence their own pay, which is not subject to firm performance, to the detriment of shareholders. An alternative approach to executive compensation determination is the tournament theory perspective (by Lazear and Rosen, 1981a), which indicates that remuneration of an executive director is determined through the position of the executive within the firm hierarchy. Other perspectives on executive compensation are Murphy and Zabojnik's (2004) market-based approach, which suggests that the level of CEO pay is determined by competition among firms for executives and depends upon the portion of the CEO's skills that are transferable across firms and industries. It is supported by social comparison theory (Festinger, 1954), which indicates that executive remuneration is related to industry "norms" and the size of the firm. The corporate growth model also suggests that firm size is a primary determinant of executive compensation. Details of these theoretical approaches to studies of executive compensation determination will be reviewed below.

3.1.1 Agency theory perspectives

Based on the risk-sharing literature[4] (Arrow, 1971; 1996), agency theory includes the so-called agency problem that occurs when cooperating parties (the principal and the agent) have different goals and interests. Agency theory attempts to describe the agency relationship between the principal and the agent using the metaphor of a contract (Jensen and Meckling, 1976). It is concerned with resolving two problems that can occur in agency relationships. The first is the agency problem that arises when there is a conflict of interest between the principal and the agent; and when it is difficult and expensive for the principal to verify whether the agent has behaved appropriately. The second is the problem of risk sharing that arises when the principal and the agent have different attitudes toward risk, and accordingly different actions with risk preferences. Because the unit of analysis is the contract governing the relationship between the principal and the agent, the focus of agency theory is on determining the most efficient contract governing the principal-agent relationship given assumptions about people (self-interest, bounded rationality, risk aversion), organization (goal conflict among members), and information (information is a commodity which can be purchased).

Modern corporations appearing in the last century have brought into existence the richest source of study for agency theorist (especially positivist researchers). With the separation of ownership and control in modern corporations, which was first described in the work of Berle and Means (1932), managers (the agent) have a chance to consume corporate resources and to act opportunistically for their own benefit to the detriment of shareholders (the principal). Fama and Jensen (1983b) pointed out that 'decision managers, who initiate and implement important decisions are not the major residual claimants, ...are more likely to take actions that deviate from the interest of residual claimants'. Agency theory asserts that

[4] Risk-sharing literature describes the risk-sharing problem as one that arises when cooperating parties have different attitudes toward risk.

firms can employ various mechanisms to minimize those opportunistic actions and align the interests of the agent and those of the principal. Jensen & Meckling (1976) suggest the incentive contract and ownership structure, including managers' equity ownership, as mechanisms to align managers' interests with those of owners. Fama & Jensen (1983b) describe the role of the board of directors as an information system that the stockholders within large corporations could use to monitor the opportunism of top executives and managers. Fama (1980) discussed the role of efficient capital markets and labour markets, especially the market for corporate control, as information mechanisms that are used to control the self-serving behaviour of top executives. However, due the scope of this thesis, only those internal mechanisms (optimal contract, directors' ownership, and board of directors) are focused upon.

The first mechanism, according to agency theory, is the design of an optimal contract to align the interests of managers and shareholders. The optimal contract is the one that minimizes agency costs (Jensen & Meckling, 1976). Under the agency perspective, the board (principal's representative) seeks to design an optimal incentive compensation contract for top executives, in an attempt to maximize shareholders' wealth. The optimal executive compensation package would be concerned with: (1) attracting and retaining high quality executives; (2) providing executives with incentives to exert sufficient effort and to make decisions that serve shareholders' interests; (3) minimizing overall costs. The optimal contract thus should in form of an incentive contract as under imperfect information, incentive contract based on the outcomes can help improving agency problems (Holmstrom, 1979). If the agent's actions are less than completely observable (as normally seen), the principal will want to provide incentives for the agent by basing compensation on output performance. The incentive contract, therefore, should comprise both fixed element (as risk-averse agent assumption) and performance-based element. It can be expressed in the following basic equation: $\mathbf{Pay = \alpha + \beta\ Performance}$, where Pay is the total reward received in return of the agent's effort; α is a fixed amount; and Performance is a measure of the

outcome of his performance; β is the reaction coefficient reflecting the sensitivity of executive compensation to performance. The magnitude of the coefficient is interpreted as reflecting the operation of principal-agent type mechanisms, with higher value of β suggesting closer alignment of management and shareholders' interests (Conyon, et al., 2001). In this way, managers share the risk with shareholders and partially make the residual claimants of interest resulted from their own decisions. Such outcome-based contract motivates behaviour of the managers to align their interests with those of shareholders, however, at the price of transferring risk to managers. The issue of risk arises because outcomes (firm performance) are only partly a function of managers' behaviours. There are a variety of factors (government policies, economic climate, competitors' actions, technological changes, etc.) may cause uncontrollable variations in the outcomes. As the outcomes uncertainty increases, it becomes increasingly expensive to shift risk to managers (who are assumed to be risk-averse) despite the motivational benefits of outcome-based contracts. It means when outcomes are increasingly uncertain and uncontrollable by the agent, the performance-based contract will not attractive as the agent is reluctant to bear greater risks, and agency mechanism through optimal contract cannot be achieved.

Accordingly, the monitoring mechanism is proposed to minimize the problem of information asymmetry and to prevent the agent from making decisions that divert resources away from the principal's interests (Fama, 1980). The central of monitoring mechanism is the investment in information systems (such as budgeting systems, reporting procedures, board of directors and additional layers of management) to reveal the agent's behaviors and get it more observable. Among those systems, board of directors is one particularly relevant information system for monitoring executive behaviors. Board of directors is viewed as a key internal governance mechanism and an 'essential monitoring device' to minimize agency costs and management's opportunism (Fama and Jensen, 1983b; Jensen and Meckling, 1976). The monitoring function refers directly to the responsibility of directors to monitor managers on behalf of shareholders. Directors' monitoring function was discussed in a

number of specific activities, including monitoring the CEO (Boyd, 1995; Daily, 1996), monitoring strategy implementation (Rindova, 1999), planning CEO succession (Pitcher, et al., 2000), evaluating and rewarding CEO (Conyon and Peck, 1998a) etc. The primary driver of each of these activities is the obligation (met by board's scrutiny, evaluation, regulation of management's actions) to ensure that management operates in the interests of shareholders (Hillman and Dalziel, 2003). When the monitoring function is effective, i.e. board of directors provides richer information about executives' behaviors and actions, compensation for executives is less likely to be based on firm performance. Executive would then be rewarded for their knowledge and for taking well-conceived actions. Also, when board of directors provide richer information, top executives are more likely to engage in behaviors that are consistent with shareholders' interests.

3.1.2 The Managerial Power Perspectives

Bebchuk et al (2002) challenge the optimal contracting view from agency theory and suggest that executive-pay-setting process in publicly traded companies has strayed far from arm's-length model[5], a condition for optimal contract. Indeed, directors' behavior is also subject to an agency problem, which in turn undermines their ability to address effectively the agency problems in the relationship between managers and shareholders. Directors generally wish to be re-appointed to the board, for attractive salary, prestige and valuable business and social connections. Executives (especially the CEO) play an important role in re-nominating directors to the board, thus directors usually have an incentive to favor the CEO and other executives, and also pay arrangements for executives. Moreover, market forces are not sufficiently strong and fine-tuned to assure the optimal contracting outcomes. For these reasons, Bebchuk & Fried (2004) suggest that executives have substantial

[5] Arm's-length bargaining model assumed that pay arrangements are the product of arm's-length bargaining. It is the bargaining between executives attempting to get the possible deal for themselves and boards seeking to get the best possible deal for shareholders.

influence over their own pay and the greater is managers' power, the greater is their ability to extract 'rents' (i.e. arrangements that are substantially more favorable than those they could obtainable under effective arm's-length bargaining).

One important building block of the managerial power approach is 'outrage' costs and constraints. Outrage represents the economic and social costs to directors and executives when a board approves a compensation arrangement favorable to managers. The more outrage a compensation arrangement is expected to generate, the more reluctant directors will be to approve it and the more hesitant managers will be to propose it in the first place. Thus, whether a compensation arrangement that is favorable to executives but suboptimal for shareholders is adopted will depend on how it is perceived by outsiders. To avoid or minimize the 'outrage' that results from outsiders' recognition of rent extraction, executives have strong incentive to obscure and legitimize (or more generally to 'camouflage', another important building block of the managerial power approach) their extraction of rents in pay arrangements. Camouflage thus allows executives to reap benefits at the expenses of shareholders. More importantly, attempts to camouflage can lead to the adoption of inefficient compensation structures that harm manager's incentives to appropriate behaviors/actions and subsequently firm performance. Overall, the camouflage motive turns out to be quite useful in explaining many otherwise puzzling features of the executive compensation landscape (Bebchuk and Grinstein, 2005).

The excess pay that executives are able to extract because of their positional power constitutes rents. Because rent extraction is associated with managerial power, the managerial power approach suggests that there is correlation between managerial power and rents. Specifically, the managerial power approach predicts that pay will be higher and/or less sensitive to performance in firm where managers have relatively more power (Bebchuk and Fried, 2004). The power of the CEO and executives will depend largely on the ownership structure of the firm. The power of executives tends to increase with their

personal shareholdings and will tend to decrease with the percentage of shares owned by outside stakeholders, especially institutional shareholders. The managers' power also depends on the organization and composition of the board. When board of directors is relatively weak or ineffectual vis-à-vis the CEO, there is more power to the CEO and executive directors and subsequently high compensation. The managerial power approach also points out that managers would tend to have more power when managers are protected by anti-takeover arrangements. It is also important emphasis from managerial power approach that the cost to the shareholders resulting from the extraction of rents might well be higher than the amount of rents extracted by managers.

3.1.3 Tournament theory perspectives

Tournament theory considers a group of agents who compete for a fixed prize and are rewarded on their relative performance(see Ehrenberg and Bognanno, 1990; Green and Stocky, 1983; Lazear and Rosen, 1981a; Prendergast, 1999; Rosen, 1986). An application of tournament theory in the economics of executive compensation is the competition to become CEO. The theory explains the large disparity between CEO pay and the pay of executives located one level down the organizational hierarchy. It specifies that the prizes are fixed in advance and agents (tournament participants) expend effort to increase the likelihood of winning a prize. Rank-order schemes are appropriate in constituting relative performance evaluation when neither the input nor output of an individual can be adequately measured on a cardinal scale. A pure tournament compensation system relies on an ordinal measure of performance and commits the principal to fixed total amount of compensation to be paid across all agents. Individuals' shares rest on their ranking. Rosen (1986) adopts tournament structure to explain hierarchical pay. Incentives are maintained by the manager valuing the certain prize from his current rank plus the discounted sum of successive inter-rank reward that may be achieved in future matches. An incentive-maintaining reward structure for risk-

neutral managers requires a constant inter-rank spread, with a distinctly larger jump at the apex. For risk-averse managers, the inter-rank spread must be strictly increasing as one moves up the hierarchy with an even larger jump at the apex.

Tournament structures are desirable for two reasons. When managers' talents are uniform, tournament structures can be justified purely on their ability to maintain managers' incentives though out the hierarchy (Pavlik, et al., 1993). If managers' talent varies, then tournaments can also help to identify the human capital of competitors. Thus tournaments both provided incentives and help identify the human capital of the competitors. Moreover, tournament theory implies that executives' compensation reflects, in addition to current performance, their past (tournament) performance and the productivity induced on lower ranks as part of a firm's tournament incentive scheme for all its employees.

The limitations of tournament theory (as noted by Dye, 1984) are (1) an employee with little perceived chance of wining may not be motivated through a tournament; (2) if workers are to receive on average the expected value of their marginal product, then losers of tournaments who would be paid less than their marginal product should switch to firms that contract to pay workers their expected marginal product, thereby weakening the incentive effects of tournaments; (3) there may be significant moral hazard problems through which workers collude to reduce their effort levels or, more importantly, sabotage each other's efforts. Lezear (1989) demonstrates that where uncooperative behaviour is concern, some pay compression within a relevant reference group can be efficient. Nevertheless, tournaments are an important rationale for promotion-based incentive schemes.

3.1.4 Other perspectives on executive remuneration determination

- ***Market-based perspective***

In challenging the managerial power theory by Bebchuk et al (2002); Murphy & Zabojnik (2004) has proposed a market-based explanation for the recent trends of large and continuous increase in CEO compensation. They reveal that both the trend in CEO pay and the trend in outside hiring (not internally promoted) reflect a change in the composition of managerial skills needed to manage a modern corporation. This is explained for (1) general managerial skills (i.e. the skills transferable across companies) become relatively more important for the CEO job; and (2) firm-specific knowledge are less important to be a CEO candidate because these information is available widely and in computerized form. Thus in Murphy & Zabojnik's model, an increase in the importance of the general relative to firm-specific component of managerial capital leads to fewer internal promotions, more external hires, and an increase in equilibrium average wages for CEOs. In contrast to the rent-extraction hypothesis of Bebchuk et al (2002), Murphy & Zabojnik (2004) proposed that the increase in pay is not only consistent with competition, but also is evidence of the importance of the market for CEOs in determining CEO pay levels. In sum, the level of CEO pay is determined by competition among firms for executives and depends upon the portion of the CEO's skills that transferable across firms and industries.

- ***Neoclassical Theory***

Neoclassical theory is initiated by Roberts (1956), Marris (1967) and Yarrow (1972). Accordingly, executives' compensation is treated as an input of the production function. The argument for this is there is a one-to-one relationship between compensation and executives' "Ability Quotient", which is defined as the ability of a team of optimum size to earn profits

from a standard set of assets under standard conditions (Marris, 1967). The concept of Ability Quotient (AQ) required that executives are perfectly replaceable, i.e., any team of a certain AQ will deliver the same expected performance and there is no special relation between firms and their executives. It also assumes that the market for executives is in overall equilibrium. Firms can always instantly get a team of given ability at a proper price. Therefore, it is the shareholders who decide the compensation by determining the optimum executive AQ level for their firms. It can be inferred that the lowest limit that the firm could pay the executive is the payment he could get from his next best employment alternative and the maximum compensation that a firm is willing to pay is the value of his AQ. In a perfect competition market for executives, these two limits should be equal in equilibrium. However, in an imperfect market, the pay rate should fall somewhere between the two limits.

This theory therefore predicts that executive on the top of the AQ ladder will be hired to manage the largest firm and consequently will receive the largest compensation. In case of two firms of identical characteristics accept CEOs of different ability, the firm with CEO of higher ability will enjoy higher profits before deducting CEO remuneration than the other, but profits after deducting that amount are the same. So the profitability for two firms is the same. The salary differential between the two CEOs is the difference in their achieved profits. However, if the pay is only a percentage of the higher profits, it is expected that the CEO of the firm with higher profitability will have higher remuneration. This result led to Marris's (1967) and Yarrow's (1972) prediction that CEO remuneration is related to firm size and profitability.

- ***Social comparison theory***

The theory of social comparison process developed by Festinger (1954) proposes that the setting up of expected rewards is equity-securing as decision makers routinely base upon a set of social norms and comparisons to determine compensation. Firms have to pay

their executives at least at the 'going rate' for reasons of recruitment, motivation, retainment and even external credibility (Ezzamel and Watson, 1998). Festinger (1954) pointed out that there is a natural need for individuals to evaluate their abilities. In order to realize this need, people choose, as comparison standard, others who are perceived to have similar abilities or attitude. This point is also noted by Goodman (1974) that individuals are also more likely to 'select as comparisons others who are seen as slightly better or more expert'.

Furthermore, given the condition that executives' performance is 'ambiguous' (March, 1984), one logical way for compensation committee to decide on compensation levels is by making social comparisons. Members of the compensation committee normally consist of those who do not serve on the management board, and who are frequently CEOs of other firms (Kesner, 1987). This selection of members of management and those of compensation committee may be based upon their similarity (Festinger, 1954). As such, compensation committee members may make judgment about proper CEO pay by making a comparison to the award they receive themselves.

In sum, executive compensation has been approached from different perspectives such as dominant agency theory, the managerial power perspective, tournament theory, market-based perspective, etc. Each perspective suggests different determinants of executive remuneration, which are supported by empirical studies. This thesis, however, concentrates on three main conceptual perspectives, namely agency theory, the managerial power perspective, and the tournament theory; to derive hypotheses on the determinants of executive pay components and pay structure to be presented in Chapter 4. Before reviewing prior literature on executive compensation, the following section provides the structure of a normal executive compensation package and description of its components, as a guide for later review and analysis.

3.2 The Structure of Executive Compensation Package

Although there is substantial heterogeneity in pay practices across firms, industries and countries, most executive compensation packages are comprised of base salary, annual bonuses and incentive pay, which includes stock options and long-term incentive plans (LTIPs). Murphy's (1999) survey on US data provides a comprehensive review of the executive compensation literature with details of pay components. According to the survey, pay level has increased substantially over time, which is largely attributable to the increase in the grant-date value of stock option grants, and varies by industry. Moreover, executive pay is higher in larger firms despite the fact this relationship has weakened over time. In the UK, Conyon *et al* (2000) describes the structure of executive compensation as complex with different elements of incentive pay including share options (which is contingent on performance criteria) and long-term incentive plans (LTIPs). Using a sample of the 200 largest companies in the 1997 fiscal year, Conyon *et al* (2000) documented that approximately one third of companies had introduced LTIPs as a complement to executive option plans. Later work by Conyon and Murphy (2000) provides a comprehensive comparison of pay practices in the US and the UK. They document the differences in the percentage of share option grants (valued at grant date) over total pay, where the US CEOs have a higher percentage than their UK counterparts. In addition, American CEOs earn 45% more in cash pay and 190% in total pay, even after controlling for size, industry, growth opportunities, CEO human capital and other observable characteristics. In sum, the structure of executive compensation is comprised of the following elements.

Base salaries, a key component of executive employment contracts, are typically determined through competitive 'benchmarking'. Murphy's (1999) survey shows that salaries comprise a declining percentage of total compensation. However, the salary-determination process still receives substantial attention from executives since (1) base

salaries represent the 'fixed component' in employment contracts, that "risk-averse executives will naturally prefer a dollar increase in base salary to a dollar increase in target bonus or variable compensation" (Murphy, 1999, p.2498); and (2) most components of compensation are measured relative to base salary levels: target bonus as percentage of base salary, option grants as multiple of base salary, pension benefits and severance arrangements also depend on salary levels. Conyon's *et al* (2000) survey for 200 companies in UK for the 1997 fiscal year shows that salary is still a significant part of executive cash compensation (about 70%) and of total compensation (54%).

Survey by Bruce Overton Consulting (2003) of 100 large and 100 small US company show that salaries for CEO positions normally increased around 7 percent for every two years. Executive salaries are adjusted less frequently at low level because (1) salaries are used to establish the executive's basic life style, which does not typically change on an annual basis, and (2) executive salary increases are intended to recognize the labor market value of the executive's position, not to reward performance. In fact, in most companies, non-executive directors who are acutely aware of potential conflicts of interest between managers and shareholders over the level and structure of compensation (normally devolved to a remuneration committee) make decisions about executive pay. In practice, however, most remuneration committees take advice and derive information from the company itself (i.e. human resource department) and from outside professional advisors. This practice and the volume of information disclosure in annual reports about executive pay have led to a "ratcheting up" effect (an upward pressure) on executive pay (Conyon et al, 2000). Ezzamel & Watson's (1998) study of UK firms also support the hypothesis of "ratcheting up", which contends that executives paid below the going market rate are more likely to have their compensation increased but those above the prevailing market rate are less likely to see their compensation reduced.

Annual bonus plans, which are paid based on single-year accounting performance, can be categorized in terms of three basic components: performance measures, performance standards, and the structure of the pay-performance relation (Murphy, 1999). Under typical plan, no bonus is paid until a threshold performance is achieved, and a "minimum bonus" (as percentage of target bonus) is paid at the threshold performance. Target bonuses are paid for achieving the performance standard, and there is typically a "cap" on bonuses paid (as percentage or multiple of target bonus). The "incentive zone" (the range between the threshold and cap) indicates the range of performance realizations where incremental improvement in performance corresponds to incremental increase in bonuses. According to Murphy's (1999) survey, a variety of financial and non-financial performance measures are used, in which almost are accounting profits (such as revenues, net income, pre-tax income, operating profits or economic value added). Non-financial performance measures are less common, mostly used in utilities industry, and include individual performance, customer satisfaction, operational and/or strategic objectives... Each performance measure used in the plan can be determined by different performance standards[6]. Also, there is variety of different ways determining payouts from bonus plans. The most common payout method is the "80/120" plan that no bonus plan is paid unless performance exceeds 80% of the performance standard, and bonuses are capped once performance exceeds 120% of the performance standard. The next most common type of plan is "Modified Sum-of-Target", where target bonus pool (the sum of the target bonuses across individual participants) is adjusted depending on actual performance at the year-end and this actual bonus pool is

[6] Murphy (1999) summarizes six performance standards including (1) "Budget" standards (based on performance measured against the company's business plan or budget goals); (2) "Prior-Year" standards (based on year-to-year growth or improvement); (3) "Discretionary" standards (performance targets are set subjectively by the board of directors following a review of the company's plan, prior-year performance, budgeted performance, or a subjective evaluation of the difficulty in achieving budgeted performance); (4) "Peer Group" standards (based on performance measured relative to other companies in the industry or market); (5) "Timeless" standards (measuring performance relative to a fixed standard); and (6) "Cost of Capital" standards (based on company's cost of capital such as economic value added).

typically divided among participants based on their individual target bonus. These two payout methods account for 70% of the plans in Murphy's (1999) sample companies. Other methods include formula-based plans (bonus pool is determined based on both target bonuses and individual performance) and discretionary plans (firm and individual performance is assessed subjectively by the board of directors based on a variety of financial and non-financial criteria).

Stock options are contracts, which give the recipient the right to buy shares at a pre-specified exercise price for a pre-specified term. In practice, most options expire in 10 years (83%) and are granted with exercise prices equal to the "fair market value" on the date of grant (95%), (Murphy, 1999). Executive options are non-tradable and typically forfeited if the executive leaves the firm before vesting or the stock price does not reach a pre-determined price hurdle or performance not exceed the market index within a specified period of time. Stock options reward only stock- price appreciation and not total shareholder return (different from executive stock ownership) because it does not include dividends, which is paid accumulatedly upon exercise of the underlying options (Murphy, 1999). Since the payout from exercising options increases dollar for dollar with increases in the stock price, stock options provide a direct link between managerial rewards and share-price appreciation. As the value of options increase with stock-price volatility, executives have incentives to avoid dividends and to favor share repurchases. Lambert et al (1989) find that expected dividends decrease following the initial adoption of top management stock option plans. Moreover, executives with options have incentives to engage in riskier investments (Agrawal and Mandelker, 1987 and Hirshleifer and Suh, 1992).

Unlike boards in the US, the majority of boards in the UK are now attaching performance criteria to executive stock option contracts. This practice is following the Greenbury's (1995) code, which recommended that all long-term incentive schemes, including executive stock options, should be subject to "challenging performance criteria".

The Greenbury report argued that remuneration committees should "consider criteria which measure company performance relative to a group of comparator companies in some variable or set of variables, reflecting the company's objectives such as total shareholder return". It also recommended that "directors should not be rewarded for increases in share prices or other indicators which reflect general price inflation, general movements in the stock market and movements in a particular sector of the market or the development of regulatory regimes".

One crucial issue in applications of executive stock options in both research and practice is options' valuation, which is the value of the option at the grant date. The best known and most widely utilized method for calculating executive stock option is the Black-Scholes pricing formula adjusted for continuously paid dividends (as described below), which measures the grant-date expected value of the option. Black and Scholes (1973) demonstrate that, since investors can hedge, options can be valued as if investors were risk neutral and all assets appreciate at the risk-free rate. The standard Black-Scholes formula calculates the value of a single European call option as:

$$Option\ Value = Pe^{-\ln(1+d)T}N(z) - Xe^{-\ln(1+r)T}N(z-\sigma\sqrt{T})$$

where P is the grant-date share price, X is the exercise price, T is the time remaining until expiration, d is the annualized dividend yield, σ is the stock-price volatility, r is the risk-free discount rate, $N()$ is the cumulative normal distribution function, and

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

The value of an executive option grant is simply the product of the call value and the number of options in the grant. Since executives can hold many grants of options, to value

accurately value the stock options held, each grant needs to be valued separately and then take the sum of all grants.

However, the valuation of executive stock options according to Black-Scholes method is not without consequences. First, the Black-Scholes value, as measure of the company's opportunity cost of granting the option, will typically overstate the value to the executive-recipients (Hall and Murphy, 2000). Second, the Black-Scholes formula assumes constant dividend yields and stock-price volatilities, assumption which is less sensible for executive options expiring in a decade (Murphy, 1999). Third, executive stock options are subject to forfeiture if the executive leaves the firm prior to vesting; this probability of forfeiture reduces the cost of granting the option and thus implies that the Black-Scholes formula overstates option values (Conyon and Murphy, 2000). Finally, the Black-Scholes formula assumes that options can only be exercised at the expiration date, but executive options can be exercised immediately upon vesting, which has implication for reduction in the cost of granting options (Murphy, 1999 and Carpenter, 1998). Due to these limitations of Black-Scholes method, this study values stock options in a more comprehensive way as described in Chapter 5.

Long-term Incentive Plans (LTIPs), are typically grants of shares of stock that become "vested" only upon attainment of certain performance objectives (in the UK); or take two primary forms (in the US) including (1) "restricted stock" grants that vest with the passage of time (not performance criteria) and (2) multi-year bonus plans typically based on rolling-average three or five-year cumulative accounting performance (Conyon and Murphy, 2000). In the UK, the Greenbury (1995) report focused on the potential drawbacks of executive share option schemes and highlighted a clear preference for Long-term Incentive Plans. The report stated that introducing such plans "may be effective, or more so, than improved share option schemes in linking rewards to performance". Conyon's et al (2000) study, which was using 1997 fiscal year data, shows that sample companies are making

more use of grants under LTIPs with 49.5% of companies have introduced an LTIP scheme. This study also suggests that in the majority of companies, LTIPs are substitutes for, rather than complements to, executive share option plan (see descriptive analysis in Chapter 5).

Valuation of LTIPs is extremely complicated due to the performance conditions attached to the plan. Buck et al (2003) give an example of the complexity of LTIPs in UK by the case of HSBC, where LTIPs for executives are subject to performance in comparison to 329 other banks over the world. Buck et al (2003) then propose a valuation method, which estimates the performance conditions attached to the plan to generate a provisional level and value of award. Other valuation method suggested by Westphal & Zajac (1994), which is also used by several large consulting firms in conducting survey of executive compensation (for example, Towers Perrin, Manifest), is as follows.

$$\textbf{LTIPs Value} = \textbf{Price} \times \textbf{Shares} \times \textbf{Target} \times (1 / [r + p + f]^z)$$

Where:

Price = the granted share price under LTIPs

Shares = the number of shares granted

Target = the target payout, expressed as proportion of shares granted

r = the risk-free interest rate

p = long-term average equity premium

f = forfeiture risk

z = length of performance period

Detail of the valuation method to estimate LTIPs value used in this study is presented in Chapter 5.

In sum, major components of executive compensation package are salary, annual bonus, share option schemes and long-term incentive plans. Prior research (see Conyon et al, 2000; Murphy, 1999) documented salaries as main element of executive pay. However, there is evidence of increasing proportion of incentive pay in form of share option and LTIPs (Murphy, 1999). In this study, the components of executive compensation package are grouped in two measures: cash compensation (which includes salaries, bonuses and other benefit in kinds) and long-term incentive compensation (which includes share options and long-term incentive plans). The use of cash compensation measure and total compensation measure, which is sum of cash compensation and long-term incentive pay, is common in prior research (see Buck, et al., 2003; Conyon, et al., 2001; Finkelstein and Boyd, 1998; Hall and Leibman, 1998; Hambrick and Finkelstein, 1995; Jensen and Murphy, 1990; Main, et al., 1996; Murphy, 1985).

3.3 Executive Compensation and Firm Performance – Review of Literature

3.3.1 Narrative Review of Prior Literature

Research on top management compensation has gone on for more than 70 years with growing amount of empirical studies, especially since early 1980s in line with the emergence and general acceptance of agency theory. The agency theory argument that executive remuneration should be related to firm performance in order to align managers' and shareholders' interests, has received the most attention in literature. This has led to a vast body of empirical studies, which have attempted to examine the extent of the relationship between executive compensation and firm performance (Murphy, 1999). In general, whilst the majority of empirical studies do find evidence of a statistical relationship between executive pay and firm performance, the economic significance of the relationship has been found to be very small (Conyon and Murphy, 2000; Jensen and Murphy, 1990).

Early empirical studies lend support to the managerial notion that firm size was important determinant of executive compensation, with firm performance (specifically accounting profit) plays a less significant role in determining the level of executive compensation (Cosh, 1975; Lewellen and Huntsman, 1970). Cosh (1975) demonstrates that company size is major determinant of executive compensation, using a sample of 1600 UK companies. Baumols (1959) applied sales maximization hypothesis and also documented a positive correlation between cash compensation and firm sales. This result is supported by the work of McGuire *et al* (1962) and Hogan & McPheter (1980). These researches argue that CEOs of larger firms have more responsibilities and have to put more effort, ceteris paribus, to manage the operation and should be paid more than those CEOs in smaller firms. However, Barro & Barro (1990) find the relationship between changes in compensation are only associated with sales growth if accounting performance and stock returns are not included in the regression. Similarly, Jensen and Murphy (1990) find sales growth is only significant in explaining remuneration if accounting performance is omitted.

These earlier studies were subject to a number of methodological problems such as potential omitted variable bias (see the critique by Ciscel and Carroll, 1980). Later studies have amended the economic specification of their regression to include a greater range of potential determinants of remuneration. As a result, such studies have tended to find that both firm size and firm performance are significant determinants of executive remuneration (see, for example, Murphy, 1985). Furthermore, Tosi *et al* (2000) did a meta-analysis of prior studies and concluded that firm size and firm performance explained about half of variance in executive compensation. Pavlik *et al* (1993) note that, in general, accounting performance explains more of the variance in cash compensation (salary plus cash bonus) than does stock performance, but when a more comprehensive measure of compensation (including share options, LTIPs) is examined, stock return tends to explain more of the variation than accounting performance. Rosen (1990), summarizing the results of a number

of studies, estimates that the influence of accounting return on the log of cash compensation is approximately ten times as great as that of stock return.

Later researchers (Buck, et al., 2003; Finkelstein and Boyd, 1998; Hall and Leibman, 1998; Hambrick and Finkelstein, 1995; Jensen and Murphy, 1990; Main, et al., 1996; Murphy, 1985) used more frequently a broader definition of executive compensation that includes stock options and long-term incentive plans. These elements represent the incentive aspect of the remuneration contract that is suggested by agency literature to reduce agency cost and align the interest of managers with those of shareholders (Holmstrom, 1979; Jensen and Meckling, 1976). Fama (1980) shows that in a multi-period contract, the agent must consider future wages that will depend on the results of the agent's current actions and effort. Lambert (1983) extends the agency theory by showing that in multi-period contracts, the commitment of firm and executive to long-term contracts can reduce agency cost. According to agency theory, contracts incorporating information revealing the agent's unobservable effort will result in lower agency costs than will flat wage contracts. Practically in empirical executive compensation literature, stock compensation receives more empirical supports (Jackson and Lazear, 1991; Lambert, 1993; Paul, 1992; Scholes, 1991) for incentive reasons to align the interests of executives and shareholders. Paul (1992) and Lambert (1993) agree that if the purpose of compensation were to align the interests of executives and shareholders, it would seem most reasonable to compensate solely based on stock price. However, Bizjak et al (1993) argue that under asymmetric information, an "over-emphasis" of compensation based on short-term stock price may lead managers/executives to attempt to manipulate current stock price through less-than-optimal investment choices. Supporting this view, Lambert and Larcker (1987) demonstrate that agency theory does not imply that the optimal contract simply ties the agent's compensation exclusively to the firm's stock price.

Whilst the majority of these studies (Abowd, 1990; Conyon, 1998; Cosh and Hughes, 1997; Coughlan and Schmidt, 1985; Gibbons and Murphy, 1990; Main, et al., 1996; Main, 1991; Murphy, 1985) do report a positive and statistically significant relationship between executive compensation and firm performance. However, a number of other studies indicate only weak or statistically insignificant relationship between executive pay and firm performance (see Aggarwal and Samwick, 1999a; Akhigbe, et al., 1995; Attaway, 2000; Baker, et al., 1988; Conyon and Leech, 1993; Conyon and Murphy, 2000; Conyon, et al., 2001; Decktop, 1988; Ezzamel and Watson, 1998; Leonard, 1990; Mangel and Singh, 1993; McKnight, 1996; Veliyath, 1999). In particular, Gregg et al (1993) even found evidence of a negative relationship between executive pay and shareholder returns. Conyon (1995) also suggests that the growth in executive pay generally exceeds the growth in firm performance. Jensen & Murphy (1990) estimates that CEO wealth (including salary, bonus, the value of shareholdings, etc.) changes by $3.25 for every $1,000 change in shareholder wealth. Although the changes in CEO wealth were found to be positively and significantly related to changes in shareholder wealth, as predicted by agency theory, Jensen & Murphy contend that the magnitude of the relationship (economic significance) is small and inconsistent with the implications of agency theory. Later survey by Conyon & Murphy (2000) also report that the median CEO of US firms receives of 1.48% of any increase in shareholder wealth and only 0,25% of changes in shareholder wealth for CEOs in the UK.

To further investigate the sensitivity of executive pay on performance and the magnitude of pay-performance relationship, the next section presents a statistical review using a meta-analysis of the results of prior pay-performance empirical studies.

3.3.2 A Meta-Analysis of the relationship between Executive Compensation and Firm Performance

Prior empirical research, which examined the relationship between executive compensation and firm performance, has been subject to narrative review by Pavlik *et al* (1993). Reviewing 31 relevant studies, Pavlik *et al* (1993) documents mixed results with both positive and negative, significant and insignificant relationship; rather than evidence of systematic relationships. Subsequent survey by Murphy (1999) comprehensively reviews range of studies on executive compensation. However, it did not note evidence of systematic relationships or observed correlation between executive pay and firm performance. A meta-analysis by Tosi et al (2000) includes 38 studies and tests the hypothesized relationships between firm size, firm performance and CEO pay. They show that firm size accounts for more than 40% of the variance in total CEO pay, while firm performance accounts for less than 5% of the variance. However, ten out of 38 studies included in Tosi et al (2000) are unpublished dissertations, working papers or even unknown authors. Moreover, the adjusted mean correlation reported by Tosi et al (2000) seems overstate the true relationship between compensation and firm size or firm performance. The adjusted correlations is, on average, 17 percent higher than the observed correlations; and there are 14 adjusted correlations greater than 0.80, notably there are two perfect correlation ($r = 1.0$), which may not realistic in social science context.

Given the continuing interest and empirical attention to executive compensation as well as the lack of an up-to-date systematic review on compensation-performance empirical studies (provided the problems associated with Tosi's et al, 2000, meta-analysis), this section provides a meta-analysis of the relationship between executive compensation and firm performance with updated empirical studies. As we have identified 43 relevant empirical studies (25 of those are same as Tosi's et at, 2000), we are able to provide a meta-analytic review of the relationship between executive compensation and firm performance.

With sufficient number of studies, conclusion drawn from meta-analytic review will be more preferable than narrative review, as meta-analysis allows researchers to correct for various statistical artifacts and to aggregate results across studies to obtain an estimate of the true relationship between variables (Hunter and Schmidt, 1990). The remainder of this meta-analysis is followed by review of compensation-performance literature, sample description, meta-analysis procedure, results and conclusion.

- **Data and Coding**

A number of search techniques have been used to identify empirical studies related to executive compensation and firm performance. The initial data search consisted of computer searches of the following database: ABI Global, ESCO Premier, Sciencedirect, etc. In addition, reference lists of the potentially applicable articles, especially Tosi et al (2000), have been examined for relevant studies. The goal was to identify all empirical research that reported a correlation coefficient on the relationship between executive compensation and firm performance. It is not necessary that compensation-performance relationships be the main focus of a study, only that a simple correlation between these variables be available. The simple correlation coefficients have been collected rather than regression coefficients because regression slopes and intercepts are usually not comparable across studies, and, thus cannot be meaningfully cumulated in a meta-analysis (Hunter and Schmidt, 1990). While correlation coefficient is scale-independent, regression coefficients require all studies have used exactly the same scales to measure variables, which is normally impossible in meta-analysis.

Initially, over 60 articles and papers that reported simple or pooling correlations are identified. However, some of those are unpublished documents or from unknown authors taking from reference lists of articles, which cannot be assessed for details, are not included. The final sample includes 43 published studies with a total of 56 samples drawn from 21,237

companies. Many of the 43 studies yield information on multiple pay-performance measures, which results in 124 reported correlation coefficients between different measures of executive compensation and firm performance. The complete collection of source correlations and related sample size statistics is summarized in Appendix 1. The reported correlation in Appendix 1 is average correlation between one measures of compensation with different performance measures in one study.

Executive compensation. There are two measures of executive compensation using to code studies in this chapter: total compensation and cash compensation. Total compensation includes salary, annual bonus, long-term incentive plans and stock options, which are generally valued with Black-Scholes model. Some studies using logarithm of total compensation or change in total compensation are also encoded as total compensation. There are 24 out of 43 studies using total compensation in examining the relationship with firm performance. Cash compensation is defined as the sum of salary and annual bonus. And the use of logarithm or change in cash compensation is also encoded as cash compensation. Some studies use both salary and bonus as compensation measures, of which an average correlation is coded as cash compensation. There are 32 studies using cash compensation in examining the relationship with firm performance.

Firm performance. Studies are coded according to their use of performance measures or firm size measures. To allow *post hoc* exploration, performance measures were further subdivided into accounting profits, shareholder returns, ROA/ROE, and other performance measures, which including Tobin's Q. Size measures include indicators of sales, total assets, market valuation, and miscellaneous size measures including number of employees.

- **Meta-analytic procedure**

This meta-analysis is conducted in accordance with those guidelines provided by Hunter & Schmidt (1990). Meta-analysis is a statistical technique, which allows for the aggregation of results across studies to obtain an estimate of the true relationship between two variables in the population. The strengths of meta-analysis include its scientific rigor, little bias in the inclusion of studies, objective weighting of the studies, allowing the examination of moderating variables, estimations of relationship stability, and its ability to overcome many of the problems of traditional narrative research reviews (Schmidt and Klimoski, 1991a). Accordingly, correlations (simple correlations in cross-sectional samples and pooling correlations in panel samples) between variables of interest are collected and coded as the data for meta-analysis.

Meta-analytic procedures require that each observed correlation be weighted by sample size of the study in order to calculate the mean weighted correlation across all of the studies involved in the meta-analysis (to correct for sampling error). Variance statistics (standard deviation) of the observed correlations is then calculated to estimate the variability in the relationship between variables of interest. In addition, a 95 percent confidence interval is also calculated to allow assessment of the statistical significance of the weighted mean. A 95 percent confidence interval that does not include zero is an indicator of a relationship existed between variables of interest (Dalton, et al., 1999). Following these step, series of meta-analyses on subgroups of correlations are further conducted representing the various categories of compensation measures, firm performance and firm size measures. For each of these subgroups, weighted mean, variance and confidence interval are calculated (see Table 3.1).

- **Meta-analysis Results**

Table 3-1 presents the results of meta-analysis for executive compensation and firm performance and firm size from 124 correlations extracted from 43 empirical studies and across 21,327 companies. As suggested by Table 3-1, the correlation coefficient between executive compensation and overall firm performance is 0.07 indicating that there is a positive relationship executive compensation and firm performance. The 95% confidence interval, which is from 0.045 to 0.094, does not include zero suggesting that the true association between executive compensation and firm performance is positive and statistically significant. A breakdown of performance measures suggests that firm performance measured in shareholder returns and accounting rate of return (i.e. ROE/ROA) has slightly higher correlation with executive compensation than that measured in absolute accounting performance (such as profits). In all cases, except other performance measures, the 95% confidence interval does not include zero, providing evidence that a positive relationship exists between executive pay and firm performance. A positive association between executive compensation and firm performance suggested by this meta-analysis result is consistent with the review by Murphy (1999) and Tosi et al (2000). Despite the significance of the relationship, the correlation coefficient is quite low (at 0.07) suggesting that the association between executive pay and firm performance has little economic significance, which is already commented by Jensen and Murphy (1990), and Conyon and Murphy (2000).

Table 3-1: Meta-analysis of the relationship between executive compensation and firm performance

Variables	*No. of Correlation*	*Sample size*	*Corrected Correlation*	*Corrected Variance*	*95% Confidence Interval*
Performance Measure					
Overall firm performance	**66**	**13,143**	**0.070**	**0.010**	**.045 - .094**
Profits	16	6,370	0.067	0.014	.009 - .126
Shareholder Returns	19	3,709	0.077	0.011	.030 - .124
ROA/ROE	25	10,031	0.078	0.007	.046 - .111
Others	6	2,669	0.028	0.006	(.034) - .090
Size Measure					
Overall firm size	**58**	**16,356**	**0.219**	**0.012**	**.191 - .247**
Sales	35	11,881	0.181	0.034	.120 - .242
Total Assets	12	2,263	0.411	0.017	.338 - .485
Market Valuation	8	2,082	0.246	0.017	.156 - .337
Other	3	465	0.229	0.053	(.032) - .490
Executive Compensation x Performance Measure					
Cash Comp x Firm Perf.	39	19,557	0.055	0.017	.014 - .096
Total Comp x Firm Perf.	27	5,817	0.117	0.015	.071 - .164
Cash Comp x Firm Size	35	13,345	0.207	0.009	.176 - .239
Total Comp x Firm Size	25	5,007	0.250	0.005	.221 - .279

With respect to firm size, the correlation coefficient of the pay-size relationship is 0.219 and the 95% confidence interval does not include zero. This implies that there is a positive association between executive compensation and firm size; and this association is statistically significant. Within the measures of firm size, sales are mostly used with 35 reported correlations, however, the correlation coefficient of the relationship between firm sales and executive pay is the smallest (at 0.181). In all cases, except for other size measures, the 95% confidence interval does not include zero, suggesting that there is strong evidence of a positive relationship between executive compensation and firm size (measured in sales, market valuation, and total assets). This result is consistent with prior review by Murphy (1999) and Tosi *et al* (2000) for a strong and positive relationship between executive pay

and firm size. In comparison to the study by Tosi *et al* (2000), however, this meta-analysis reports a smaller correlation coefficient of the pay-size relationship (0.219 in this study compared with 0.520 reported by Tosi *et al*). This is due to the fact that this meta-analysis includes recent empirical studies, which reported lower correlation coefficients of pay-size relationship than those reported by earlier studies. This might indicate that the association between executive pay and firm size has decreased over time, as suggested by Jensen and Murphy (1990).

Table 3-1 also presents the results of the analysis examining the relationship between pay components (i.e. cash compensation and total compensation) and firm performance and firm size. The results suggest that the correlation coefficient between total compensation and firm performance (at 0.117) is much higher than that between cash compensation and performance (at 0.055); as well as the overall pay-performance correlation coefficient (at 0.070). This may imply that the inclusion of long-term incentives in total executive compensation helps to improve the connection between executive compensation and firm performance in the way that benefits shareholders. In all cases, the 95% confidence interval does not include zero, implying strong evidence of the relationship between executive pay components and firm performance and firm size.

The meta-analysis is continued with an analysis investigating series of measures of executive compensation, of which the results are presented in Table 3-2. The results show that in log form, executive compensation is strongly related to shareholder return with the correlation coefficient of 0.293 for total compensation and 0.140 for cash compensation. With regard to measures of firm size, log of sales is also strongly associated with the log form of compensation with the correlation coefficient of 0.423 for cash compensation and 0.324 for total compensation. This again confirms the strong connection between executive compensation and firm size.

Table 3-2: Individual Meta-analysis of specific measures of compensation

Variables	*Cash Comp*	*Total Comp*	*Δ (Cash Comp)*	*Δ (Total Comp)*	*Log(Cash Comp)*	*Log(Total Comp)*
Performance measures						
Profit	.239	.398	.022	-	-	-
ΔProfit	.210	-	.205	.238	-	-
Shareholder returns	.042	.017	.217	.069	.140	.293
ROA	.053	.081	-	.270	.080	.103
ROE	.227	.059	.023	.080	.189	.196
Others	-.003	.250	-	.03	-	-
Size Measure						
Sales	.340	.360	.020	-	-	-
ΔSales	.198	-	.019	.157	-	-
Log (Sales)	.395	.181	-	-	.423	.324
Total Assets	.424	.593	-	-	-	-
Log (Total Assets)	-	.110	-	-	.452	-
Market Valuation	.238	.424	-	-	-	-
Log (Market Value)	(.308)	-	-	-	-	-
Others	.277	.040	-	-	-	-

- **Conclusion**

The meta-analysis has shown a statistical review of prior studies and confirmed a positive correlation between executive compensation and firm performance as well as firm size. In almost all cases, the 95% confidence interval does not include zero suggesting that the pay-performance and pay-size relationships are statistically significant. The overall correlation coefficient between executive pay and performance of 0.07 indicates that the true relationship between executive pay and performance is positive and statistically significant. The meta-analysis also suggests that the inclusion/introduction of long-term incentives helps to improve the sensitivity of executive pay on performance. However, the correlation coefficient of pay-performance relationship is quite low, implying little economic significance of the relationship between firm performance and executive pay.

Meta-analysis results show a strong evidence of a positive relationship between executive pay and firm size. The elasticity of executive pay with respect to firm size is

estimated at 0.22 suggesting that a 10% increase in firm size results in 2.2% increase in executive pay. The meta-analysis results also indicate the explanatory power of firm size has declined over time.

Although total compensation including stock options and long term incentive plans has been more popular in empirical studies since 1990s, these studies mostly use panel data to examine the pay-performance relationship and seldom report simple correlations. Thus, many of these studies are not included in this meta-analysis; resulting in the dominance of cash compensation measure in studies. The exclusion of a number of recent studies, which failed to report simple correlations, is one of the weaknesses of this meta-analysis. Overall, firm performance explains only 1.38%[7] of variance in total compensation for executive directors, whilst firm size explains 6.24%[8] variance of total compensation. This result suggests further investigation on the determinants of executive compensation from factors other than firm performance and firm size.

3.3.3 Other determinants of executive compensation

As noted earlier, prior literature indicates that there are many determinants of remuneration, other than firm performance and firm size, such as human capital factors and external labour market factors. There are number of hypotheses regarding the level of remuneration which are based on the effect of an individual's human capital attributes on his/her remuneration. Such theories argue that, given individual performance may be unobservable, due to the difficulty in separating out the effects of individual effort, remuneration is based on input factors (such as individual's human capital) as indicators of an individual's performance. Moreover, individual receives lower remuneration in their early

[7] Explained variance: $R^2_{(\text{Total Pay x Firm Performance})} = 0.117^2 = 0.0138 = 1.38\%$

[8] Explained variance: $R^2_{(\text{Total Pay x Firm Size})} = 0.250^2 = 0.0624 = 6.24\%$

years on the job as they acquire firm specific human capital, in the expectation that they will receive higher remuneration in the future (Becker, 1964). Similarly, Murphy (1986) uses a 'learning' model to argue that a manager's human capital is revealed over time and hence remuneration is adjusted to incorporate these more precise estimates of human capital. Alternatively, Spence (1973) argues that human capital factors act as screening or signaling devices, whereby these factors can be used prior to appointment to indicate the level of the individual's productivity once in the job. However, the empirical evidence of the importance of human capital factors is mixed (see Agrawal, 1981; Pavlik, et al., 1993). Rosen (1982) argues that the larger firms, being more complex, are required to employ better managers. Hence the relationship between remuneration and firm size may be explained by the higher marginal product (human capital) of these better managers. However, Pavlik et al (1993) note that changes in remuneration once an executive is in post should reflect performance. In support of this, Barro and Barro (1990) report that initial compensation is significantly related to firm size. Hence, given that there may be a positive relationship between firm size and human capital factors, the inconclusive findings with respect to human capital attributes may reflect the difficulties in filtering out the effects of firm size and human capital attributes. Murphy (1985) argues that the exclusion of human capital variables constitutes a serve omitted variables problem and suggests that lack of a positive relationship between executive remuneration and firm performance is caused by failing to control for firm size and individual manager characteristics.

Riahi-Belkaoui (1992) argues that executives' remuneration may also be affected by forces external to the organization, particularly the external perception of the managerial ability of the executives (their organizational effectiveness) and the social performance (the responsibility to the community, environment) of the company. Analyzing a sample of US firms, Riahi-Belkaoui reported results consistent with the view that there was a positive relationship between executive remuneration and external perceptions of organizational effectiveness. However, he reported a negative and significant relationship between

remuneration and social performance, implying that executives were penalized for such activities. Moreover, the presence of institutional shareholders helps to increase the monitoring function of the board of directors that subsequently limits an excessive pay package for executive director.

Other relevant determinant of executive compensation, given the criticism of the lack of independence of non-executive directors and the remuneration committee, is 'social influence considerations', whereby non-executive directors sitting on the remuneration committee use remuneration received in their own companies to 'frame' the remuneration of the CEO (Tversky and Kahneman, 1974). This is consistent with Main and Johnston's (1993) finding that the existence of a remuneration committee is associated with higher level of remuneration. The 'social influence considerations' are similar to the Ezzamel and Watson's (1996) arguments that remuneration committees, in conjunction with outside pay consultants, contribute significantly to increases in executive compensation. Ezzamel and Watson's (1996) suggest that pay consultants base their recommendations on comparisons with external market rates of pay (possibly based largely on firm size) rather than on the individual directors' and indeed the firm's performance. As a consequence, the remuneration of directors who appear to be underpaid relative to the market is increased on the advice of pay consultants, but the remuneration of 'overpaid' directors is not reduced.

As the discussion illustrates, the determinants of executive compensation are extremely complex. Hence, the agency model of remuneration, which focuses on the relationship between executive pay and firm performance, will not provide a complete picture of the nature of executive compensation. Moreover, empirical studies which focus solely on the relationship between pay and performance are likely to suffer from severe misspecification problems.

3.4 Conclusion

It is clear from the discussion presented in this chapter that executive remuneration is an extremely complex topic for investigation. There are many potential determinants of executive compensation. The most common determinants of executive compensation from prior literature are firm performance and firm size. The results of the meta-analysis presented in this chapter have indicated that there is strong evidence of a positive relationship between executive compensation and firm performance as well as firm size. Whilst firm size is a significant determinant of executive pay, the economic significance of the pay-performance relationship is relatively low. Beside firm performance and firm size, prior studies also reveal other factors, such as human capital factors, share ownership, monitoring of the board, managerial power, rank order in the corporate hierarchy and external labour market factors, which play an important role in determining the level of executive compensation.

The conflict of theoretical perspectives and the methodological difficulties in incorporating potential factors into an empirical model partly explains the inconsistencies reported in prior empirical studies. The agency model of executive remuneration has provided a useful framework for examining the relationship between executive compensation and firm performance, particularly in the context of the current corporate governance debate where concern has been expressed over the apparent lack of a relationship between executive pay and firm performance. In contrast, managerial power perspective suggests an alternative explanation of executive pay, that managers use their power to extract rent and influence their own pay in the detriment of shareholders. This approach might help to explain the low correlation between pay and firm performance found in prior empirical studies, which is based on agency theory. Tournament theory, on the other hand, gives a different view to explain the level of executive remuneration. The relative

performance, rather than absolute performance, in a competitive process (a tournament) between executives and the ranking order in the organizational hierarchy are the main determinants of executive compensation. These three theories will form our argument for the development of hypotheses in the following chapter.

Chapter 4
DETERMINANTS OF EXECUTIVE REMUNERATION: HYPOTHESES DEVELOPMENT

4.0 Introduction

Within the debate over executive compensation determination, as reviewed in Chapter 3, there are many potential determinants of executive compensation. The agency theory argues for an optimal incentive contract, which suggests performance as a main determinant of executive compensation. However, agency research, while conceptually important, has produced weak or even statistically insignificant results on the relationship between executive pay and performance (Gibbons and Murphy, 1990; Jensen and Murphy, 1990; Lambert and Larcker, 1987; Murphy, 1999). Having different view, the managerial power theory suggests that executive's power, rather than firm performance, plays a key role in setting their own compensation arrangement and extracting 'rents' to the welfare of the shareholders (Bebchuk and Fried, 2004). Alternatively, the tournament theory argues that the relative performance and rank-order in the organization's hierarchy are the most important determinants of executive compensation. These three dominant perspectives only have set out different explanations of the observed levels and composition of executive pay. It is, therefore, likely that research examines alternative models from different views may be more fruitful in explaining executive remuneration.

Accordingly, this chapter provides theoretical arguments from alternative perspectives and develops hypotheses on the determinants of executive compensation for empirical tests. The arguments concentrate on three dominant perspectives: agency theory, the managerial power theory, and the tournament theory. Although this set of theories is not exhaustive, the models based on these perspectives are prominent in their respective fields

and each perspective has been the subject of prior and extensive empirical work. Agency theory and the managerial power theory have contrasting views over the relationship between executive remuneration and firm performance. Accordingly, hypotheses derived and developed from agency theory and the managerial power theory are presented together, when possible. The tournament theory, however, suggests a quite identical explanation of the determinants of executive compensation; hence hypotheses derived from the tournament theory are presented separately.

Whilst most prior research concentrated on the determination of pay level, there have been relatively few investigations (except for Beatty and Zajac, 1994; Lewellen, et al., 1987; Veliyath and Cordeiro, 2001) on the determinants of elements of pay and the structure of executive pay. Contrasting results from prior empirical studies on the determinants of executive pay and the literature gap suggest that further investigation on executive pay elements and structure of executive pay maybe more fruitful in explaining the determinants of executive compensation. Accordingly, this chapter develops hypotheses on the determinants of cash pay component, long-term incentive pay component and total executive pay; and the determinant of pay structure (ratio of long-term incentives in total pay). The extensive analyses of executive pay are expected to help explaining more clearly the forces in pay-setting process and the determinants of executive pay.

In deriving the hypotheses, there is a separation between the cost of executive compensation to the granting company and the value of the compensation package to executive. This is due to the fact that there is great difference between the cost of long-term incentive pay to the company who grants the incentives and the value of those incentives to executive director who receives. As described in Chapter 3, the best known and widely used method of estimating executive stock options is the Black-Scholes pricing model. However, this valuation method is criticized for overestimating the value of options to executive directors who are risk-averse, in whose private wealth portfolios their company stock is

already over-weighted and who are not allowed to exercise until vesting (Hall and Murphy, 2000; Murphy, 1999). In addition, the cost of incentives to company and the value of such incentives to executives vary greatly due to the performance conditions attached to those incentives. Accordingly, the derived hypotheses will take into account of possible effect of the difference between the cost of incentives to company and the actual value of incentives to executives in examining executive pay determinants.

This chapter is structured as follows. Section 4.1 presents theoretical framework and arguments, mainly from agency theory and the managerial power theory, for hypotheses on the determinants of executive pay, components of pay and executive pay structure. Three different groups of factors and criteria are identified that potentially determines executive pay components and structure of executive compensation. The hypotheses on the first group, organizational contingencies such as firm performance and firm size, are presented in subsection 4.1.1. Subsection 4.1.2 presents the arguments and derived hypotheses on the individual contingencies including executive shareholdings, executive tenure and executive age. The effect of monitoring function, which includes proxies such as the proportion of non-executive directors in the board, board size, and institutional shareholdings; is discussed and hypothesized in subsection 4.1.3. The effect of the difference between cost and value incentives is presented along with other pay-determinant hypotheses. Section 4.2 discusses the tournament theory and its predictions of the shape of executive compensation level. The key predictions of the tournament models are (1) executive pay is largely attached to job levels, and (2) the pay gap is widening through the corporate hierarchy. Other predictions of the tournament theory concerning the effect of contestant number on the tournament prize and the economic efficiency of the tournament pay structures are hypothesized consequently. Finally, Section 4.3 presents a conclusion.

4.1 Determinants of Executive pay level and Incentive pay ratios

This section provides a theoretical framework from agency theory and the managerial power theory to develop hypotheses on the determinants of executive pay level for different components as well as the determinants of the proportion of long-term incentives in total compensation. The factors that influence the level of executive pay and long-term incentive pay ratio can be categorized in three main groups, as discussed earlier. Organizational contingencies factors are those at corporate level such as firm performance and firm size. Agency theory indicates that organizational contingencies are positively related to executive compensation. The second group of factors is individual contingencies, including executive shareholdings, executive tenure and executive age. Broadly, individual contingencies are predicted to increase executive power and positively relate to executive compensation as suggested by the managerial power theory. The monitoring function of the board of directors and institutional shareholders are supposed to play a key role in executive pay-setting process. Details of these factors are discussed in the following sections.

4.1.1 Organizational contingencies and Executive compensation

Firm Performance and Executive Compensation

Agency theory suggests that incentive contract is the first-best solution to minimize the agency problems and to align the interests of managers with those of the shareholders. An incentive contract based on firm performance can help to reduce the agency costs due to moral hazard (lack of effort) and adverse selection (misrepresentation of ability) (Jensen and Meckling, 1976). Accordingly, agency theory predicts a positive correlation between executive pay and firm performance. Whilst the majority of empirical studies on agency theory did find evidence of a statistical relationship between executive compensation and firm performance, the economic significance of the relationship has been found to be very

small(Conyon and Leech, 1994; Jensen and Murphy, 1990; Murphy, 1999). Such low economic significance may be particularly explained by the fact that prior research has generally relied on a single measure of executive pay: cash pay (the aggregation of salary and bonuses) on the one hand or total pay (the aggregate of salary, bonuses, stock options and long-term incentive plans) on the other. Lewellen *et al* (1982) has explained this limitation through the *ex post* settling-up process. Specifically, the changes in salary are lagged with respect to firm performance and usually growth with firm size; bonuses are contemporaneous with firm performance; while the value of long-term incentives (stock options and LTIPs) is correlated with future firm performance. Thus, splitting the pay construct to different components may enhance understanding of the pay-performance relationship.

As discussed in Chapter 3, there are three main components of executive compensation package: salary, bonuses and long-term incentive pay (which includes share options and long-term incentive plans). Salary is referred as the 'fixed component' that is used to establish the executive's basic life style and to recognize the labor market value of the executive's position, not to reward performance. Bonuses, on the other hand, are designed as a function of current year performance and thus expected to be strongly related with firm performance. Whilst the size of long-term incentive pay (i.e. stock options and LTIPs) is normally granted referencing to current year performance with attached conditions of subsequent years' performance. Hence both cash pay (which includes salary and bonuses) and long-term incentive pay are expected to have positive relationship with firm performance.

The managerial power perspective, however, demonstrates that executive pay-setting process has strayed far from arm's length model and the managerial power, rather than firm performance, plays a key role in the compensation arrangement (Bebchuk and Fried, 2004). According to the managerial theory, executives with powers can influence their

own pay's arrangement to extract greater 'rents' to the welfare of the shareholders. However, Bebchuck and Fried (2004) also argue that the amount of 'rents' extracted by executives is dependent on the 'outrage' costs. 'Outrage' might cause embarrassment or reputational harm to executives and it might reduce shareholders' willingness to support incumbents in proxy contests or takeover bids (Bebchuk and Fried, 2003). To avoid the 'outrage' that results from outsiders' recognition of rent extraction, executives have strong incentive to 'camouflage' their extraction of rents by limiting the use of observable pay (i.e. salary) and using more of (so called) incentive pay. However, risk-averse executives with power will presumably protect themselves by limiting their exposure to firm risk. In addition, the strong desire to 'camouflage' might lead to the adoption of inefficient compensation structures or performance-related pay structures that favour powerful executives. Hence, according the managerial power theory, the incentive pay component tends to subject to easy performance hurdles, such as firm size or accounting performance, rather than market performance.

As suggested by agency theory, the compensation package for executive directors should be in term of performance-based incentive contract with greater incentive pay components. In addition, when the company achieves better performance (i.e. greater profitability) it has more ability to increase the compensation for executives (both base pay and incentive pay components). However, the increased salary will become fixed cost of operations and it can impact on future compensation costs of the company; whilst annual bonuses are normally limited to the specific percentage of base pay (i.e. salary). Many companies, then, decide to reward their executives following good performance as long-term incentives (share options and LTIPs) and make it variable cost rather than an increase in base pay. Hence, agency theory predicts that when firm performance increases, the ratio of long-term incentive pay in total executive compensation will also increase. The managerial power theory also supports a positive relationship between incentive pay ratio and firm performance, despite an alternative way. As discussed above, to avoid the 'outrage' costs, executives with power have strong incentive to 'camouflage' their extraction of rents by

limiting observable pay (i.e. salary) and disguising 'rents' as incentive pay. Hence, the proportion of long-term incentive pay in total compensation is expected to positively relate to firm performance.

Following the above arguments, the hypothesis is derived as follow.

H1: *Executive pay components and executive pay structure are positively related to firm performance*

Another issue in discussing the pay-performance relationship is the difference between the cost of granting long-term incentives to the company and their value to executives who receive. Murphy (1999) asserts that stock options cost more to shareholders to grant than they are worth to executive-recipients, and should only be granted if the incentive effect (i.e. the increased performance created by improved stock-based incentives) exceeds the difference between the company's cost and the executive's value. Hall and Murphy (2000; 2002) also argue that undiversified and risk-averse executives will generally place a much lower value on company stock options than would outside investors. In addition, the value of LTIPs is also much lower than its cost to company due to the 'challenging performance criteria' (Greenbury, 1995) attached to the LTIPs. Conyon and Murphy (2000) and Conyon et al (2001) even estimate that the actual value of LTIPs is only about 20% of their face value. The divergence between the cost and value of long-term incentives has implications for evaluating the incentives provided by executives' long-term incentive pay (Hall and Murphy, 2002). Options and LTIPs are granted to provide incentives to the extent that executives can take actions that increase the value of the options/LTIPs from the perspectives of executives. While most studies of executive incentives have followed Jensen and Murphy (1990) in defining the 'pay-performance sensitivity' from the cost of options/LTIPs; Hall and Murphy (2002) suggest that a more appropriate way of evaluating incentives is the use of the options/LTIPs value to executives. Hence, the

relationship between executive pay and firm performance is likely to be affected by the use of cost of long-term incentive pay to company and its value to executive directors. Hypothesis is as follow.

H2: *The relationship between firm performance and executive compensation is affected by the use of cost pay or pay value as measures of executive pay.*

Firm Size and Executive Compensation

The study of firm size as a determinant of executive pay stems from the late 1950s. Baumol (1959) and Roberts (1958) have supported the concept that executive compensation is directly related to firm size. Empirical studies by McGuire *et al* (1962), Lewellen & Huntsman (1970); Cosh (1975); Ciscel & Carroll (1980); Hogan & McPheter (1980), found positive associations between cash compensation and firm sales. Baker *et al* (1988) document that large firms pay their executives higher than small firms and the elasticity of compensation with respect to firm sales of about 0.3 (i.e. a 10 percent larger in sales, firm will pay its executives an average of 3 percent more). A meta-analysis of prior pay-size studies presented in Chapter 3 also suggests that the true relationship between executive compensation and firm size is positive and the correlation coefficient is about 0.22. Theoretically, the larger the firm the greater the number of shareholders; and, other things being equal, the worse the agency problem. Moreover, founding family holdings of executives tend to decline with firm size. Accordingly, self-interest executives have chance to consume company's resources and set their compensation linked to firm size for their own interests and deviate from the value-maximization interests of shareholders. In addition, the percentage of organizational resources devoted to individual executive's rewards also smaller in large firm compared to small firm (Gomez-Mejia and Balkin, 1992). The board

and shareholders, hence, find it less concern and willing to pay executives an excessive compensation package.

According to the managerial power perspective, self-interest executives with power has substantial influence over their own pay and the greater is executives' power, the greater is their ability to extract 'rents'. In order to extract 'rents' without the 'outrage' cost, resulting from outsiders' recognition of rent extraction; executives have incentive to 'camouflage' their extraction in pay arrangements. The desire to 'camouflage' might lead to an adoption of inefficient compensation structures, which are linked to firm size rather than firm performance, to favour powerful executives. Moreover, self-interest executives with power will protect themselves from firm risks by setting their compensation related to firm size (a more controllable outcome) rather than firm performance (a less controllable outcome). With power, executives also tend to 'camouflage' their rent extraction by a greater proportion of incentive pay, which is more likely relating to firm size rather than firm performance. Overall, both agency theory and the managerial power theory as discussed above support a positive relationship between firm size and executive pay elements as well as structure of executive pay (incentive pay ratio). The hypothesis is derived as follows.

H3: *Executive pay components and pay structure are positively related to firm size*

According to the main stream of agency theory, however, the primary responsibility of executive directors is to maximize shareholder wealth through raising firm performance and share price, not the firm size. Strategy to increasing firm size is not considered as value maximizing for shareholders and thus incentive pay should not base on firm size. Practically, Jensen and Murphy (1990) demonstrate that the explanatory power of firm size has declined over time. Agency theory also asserts that the incentive contract (proportion of incentive pay) is associated with the risk of outcomes (uncertainty of firm performance). As the firm size

increase, there is less uncertainty in the performance because larger firms diversify their business better than smaller firm.

With regard to the cost versus the value of long-term incentive pay, the managerial power theory emphasizes that the cost to shareholders resulting from the extraction of rents might well be higher than the amount of the rents themselves (Bebchuk and Fried, 2004). From prior discussion, Murphy (1999) and Hall and Murphy (2002) also assert that long-term incentives (stock options and LTIPs) cost more to shareholders than they are worth to executives. Moreover, the value of long-term incentives to executives subjects to performance conditions of the company in subsequent years. The performance conditions are normally measures both in absolute terms (growth of EPS, shareholder returns) or relative performance (ranks in peer group of competitors). The value of long-term incentives hence is independent of firm size.

4.1.2 Individual Contingencies in Determining Executive Compensation Elements

Executive shareholdings

Agency literature by Jensen and Meckling (1976) documents that shareholdings owned by managers helps to align the interest of shareholders and managers. According to Jensen and Meckling (1976), managers' natural tendency is to allocate the firm's resources in their own best interests, which may conflict with the interests of outside shareholders. However, as managers' equity ownership increases, their interests coincide more closely with those of outside shareholders, and hence the conflicts between managers and shareholders are likely to be resolved. However, shareholdings owned by executives are normally subject to institutional restrictions or controls on equity trading unlike diversified investors. This is because the equity trading of executives, who possess private and inside information of the firm and their own ability/effort, will signal the market and other

investors of unfavourable firm perspectives. Such restrictions on executive's equity transfer may create greater transaction costs in trading the investment than that for diversified investors. Therefore, the magnitude of the existing shareholdings owned by managers may influence their willingness to accept further risk bearing, such as stock options and restricted stocks, in their compensation contracts. Hence it can be derived that existing shareholdings owned by executives prevent them from accepting compensation contract with high proportion of share-based contingent elements. Also, from the principal's viewpoint, the close relationship between executive shareholdings and firm value suggests that executive shareholdings are likely to be substitute for incentive compensation as the mechanism to align the interests of managers and shareholders. Thus, a board compensation committee will not find it necessary, ceteris paribus, to incorporate higher incentive elements in the compensation contract for executives. The hypothesis according to agency theory thus is derived as follow:

H4a: *Executive pay components and pay structure are negatively related with executive shareholdings*

The managerial power approach, however, predicts that as an executive's share ownership increases, thereby making executive more powerful vis-à-vis other shareholders, his/her compensation will increase. With higher power through share ownership, the executive will try to extract more 'rents' with excessive compensation arrangement. And to avoid 'outrage' costs, executives will try to 'camouflage' the amount and performance-insensitivity of compensation. Hence, according to the managerial theory, the level of compensation and incentive pay ratio are predicted to be positively related to executive's share ownership. Hypothesis is.

H4b: *Executive pay components and pay structure is positively related with executive shareholdings*

Executive Tenure & Age

Executive with longer tenure (and assumingly higher age) is argued to have greater level of firm-specific human capital (Buchholtz, et al., 2003). According to human capital theory, longer tenure with age leads to greater expertise and experience for executives, who can have greater contribution to increase firm value; and hence, their compensation tends to increase (Agrawal, 1981). The managerial power perspective suggests that tenure and age will increase executives' power and allow them to extract rents at the detriment of shareholders wealth. It is suspected that the longer the tenure of executive, the more entrenched they are likely to become and the more power to pursue their own interests rather than those of shareholders. Firstly, executives (in particular, the CEOs) nominate new board members (Herman, 1981; Mace, 1971; Pfeffer, 1972; Vance, 1983). Thus, they may be able to exercise increasing influence over board composition, adding new directors and removing troublesome ones (Finkelstein and Hambrick, 1989). Initially, new executive directors may have little influence over their boards, since their predecessors presumably nominated most board members, who therefore have little personal loyalty to the new executive. However, over time executives (CEOs) may he able to populate boards with their own nominees. Since these new outside directors owe their position to the executive (CEOs), they may not evaluate those individuals objectively, and their loyalty may be to the executives (CEOs) rather than to stockholders. Thus, as Fredrickson *et al* (1988) observed, it is possible that "CEOs gain power over time as they gain voting control, establish a patriarchal aura, or co-opt the board of directors". A second factor leading to increased influence is that with time executives may be able to gain control over firms' internal information systems. By doing so, they may be able to withhold relevant information "from compensation committees when that information would attribute poor firm performance to bad management" (Coughlan & Schmidt, 1985). In addition executives may be able to use control over information systems to determine the agendas of board meetings in a manner that casts them in the most favourable light. Hill and Phan (1991) also argue that once executives establish a

performance record and build relationship with key stakeholders, they may be difficult to be removed. Thus, according to managerial theory (and human capital theory), tenure and age play important role in determining the level of executive compensation.

In addition, the managerial power theory argues that executives with increasing power will try to extract 'rents' rather than acting on shareholders' interest. And to avoid the 'outrage' cost, which results from outsiders' recognition of rent extraction, powerful executives have incentive and ability to 'camouflage' their extraction of rents in term of "controllable-conditions" incentive pay elements rather than observable pay elements (e.g. salary). Hence the proportion of long-term incentives in total executive compensation is expected to increase along with executive tenure and age.

However, by the time (age) and with longer tenure in the position, executive directors tend to have larger proportion of their private wealth holding in company's shares, which are accumulated from prior years' share-based compensation. Hence, agency theory argues that risk-adverse executives, who presumably protect themselves by limiting their further exposure to firm risk, are less likely to accept an incentive-driven compensation contract. Hill and Phan (1991) also comment that the strength of the relationship between executive compensation and stock returns decreases with tenure. It means proportion of incentive pay in total executive compensation will decrease with executive tenure and their age.

Following the above arguments, hypothesis is developed for executive tenure and executive age as follows.

H5: *Executive pay components and pay structure are positively related to executive tenure and executive age.*

4.1.3 Monitoring Function and Managerial Incentives

According to the agency theory perspective, optimal incentive contract is stressed as the first-best solution to the agency problems. When the optimal contract cannot be achieved or managers are reluctant to bear greater risks, owners (shareholders) must create alternative mechanisms to monitor managerial actions by investing in information system such as budgeting systems, reporting procedures, board of directors, and additional layers of management (Fama and Jensen, 1983b). One particularly relevant information system for monitoring executive behaviors is the board of directors. Board of directors is viewed as a key internal governance mechanism and 'essential monitoring device' to minimize agency costs and management's opportunism (Jensen & Meckling, 1976; Fama & Jensen, 1983; Weisbach, 1988). The optimal level of monitoring should be based on the magnitude of the incentive gap between principal and agent (Fama & Jensen, 1983). A higher level of monitoring by boards of directors would be required when a manager does not accept any compensation risk tied to firm performance. Strong monitoring is therefore particularly appropriate when managerial incentives are only weakly tied to firm performance, and the benefits of monitoring would outweigh the costs.

The monitoring function of the board refers directly to the responsibility of non-executive directors to monitor managers on behalf of shareholders. Monitoring function concerns an *ex post* "settling up" process whereby monitors (board of directors) directly observe and evaluate either the agent's behaviors, outcomes, or both and then determine compensation awards (Wiseman & Gomez-Mejia, 1998). Directors' monitoring function was discussed in a number of specific activities, including monitoring the CEO (Boyd, 1995; Daily, 1996), monitoring strategy implementation (Rindova, 1999), evaluating and rewarding CEO (Conyon & Peck, 1998) etc. The primary driver of each of these activities is

the obligation (met by board's scrutiny, evaluation, regulation of management's actions) to ensure that management operates in the interests of shareholders (Hillman & Dalziel, 2003).

According to agency theory, the ownership structure of the firm may affect the ability and incentives of shareholders to provide alternative forms of monitoring. Specifically, the concentration of ownership will help to reduce the cost of monitoring and increase the level of monitoring. Institutional shareholders represent the most important shareholding group, who has incentives to obtain the information necessary to effectively monitor management. Hence the following sections firstly discuss the first two proxies which measure the board monitoring function (board size and balance of non-executive directors on the board) and the relationship with executive compensation. One may argues for other proxies of board monitoring function, however, these two proxies are the most classic and dominant measures of board monitoring; and it is also due to the availability of data. Secondly, the presence and concentrated ownership of institutional shareholders are discussed in connection to level of monitoring and executive compensation.

Board size

According to agency theory, there are increased problems of communication and coordination and decreased ability of the board to control management when there are more members on the board (Jensen, 1993; Yermack, 1996). Board effectiveness may decline as board size increases above a moderate number. Jensen (1993), Firstenberg & Malkiel (1994) and Lipton & Lorsch (1992) suggest a board of seven to nine members. Firstenberg & Malkiel (1994) argue that a board with eight or fewer members "engenders greater focus, participation, and genuine interaction and debate". Larger board is unlikely to function effectively that could make coordination, communication and decision-making less manageable and easier to be controlled by CEO (Jensen, 1993). Also, the largeness can significantly inhibit a board's ability to initiate strategic actions (Goodstein *et al*, 1994). This

idea is consistent with the more general view that larger boards may be less participative, less cohesive, and less able to reach consensus. Judge and Zeithaml (1992), for example, reported that larger boards were less likely to become involved in strategic decision making. Yermack (1996) concluded that whatever benefits may be associated with board largeness may be overwhelmed by poor communication and decision-making process. Mintzberg (1983) also suggested that board members' assessments of top management are more easily manipulated when boards are large and diverse. Hence, agency theory predicts that larger boards tend to be less effective in monitoring and supervision, and subsequently the level of executive pay components tend to be higher.

When the size of the board is getting large, the monitoring function of the board is diminishing in controlling the behavior of executives and thus the monitoring mechanism is not effective in resolving the agency problems. In this case, it is necessary to use incentive contract, as a more optimal choice, to align the interests of managers with those of shareholders. Hence, the proportion of incentive pay in total compensation for executive directors is expected to relate positively to the size of the board. In addition, the managerial power perspective predicts that when the board is relatively weak and ineffectual, executives would tend to have more power to extract rents through compensation arrangement. Core et al (1999) find that CEO compensation is higher under the following conditions: (1) when board is large, which makes it more difficult for directors to organize in opposition to the CEO; (2) when more of the outside directors have been appointed by the CEO, which could cause them to feel a sense of gratitude or obligation to the CEO; and (3) when outside directors serve on three or more boards, and thus are more likely to be distracted. Accordingly, given larger board, executives are likely to have more power

to extract 'rents' and 'camouflage' rent extraction in term of higher incentive pay element, which is supposed to relate easy performance conditions.

Non-Executive Directors

There is near consensus in the conceptual literature that effective boards will be comprised of greater proportions of outside directors (Lorsch & MacIver, 1989; Mizruchi, 1983; Zahra & Pearce, 1989). The preference for outside-dominated boards is largely grounded in agency theory, which emphasizes the monitoring functions of directors. According to agency theory, outside non-executive directors are believed to provide effective monitoring and controlling executives' behaviors to ensure executives engages in those actions that are consistent with shareholders' interest. Fama (1980) and Fama & Jensen (1983) viewed non-executive directors as professional referees and experts in internal organizational control because of their independence from firm's management. Agency scholars thus argue for a board consisting of primary outside non-executive directors. This view is illustrated by the work of Weisbach (1988), Dalton & Rechner (1989), Daily & Dalton (1994), Barnhart et al (1994), Daily (1995), Daily & Johnson (1997), Cole et al (2001), etc. Once the monitoring is effective (with the presence of major outside non-executive directors on board), it is not necessary to have an incentive contract that ties executive compensation to firm performance. Effectively, the level and proportion of incentive pay in total compensation would be negatively related to the balance of (percentage of non-executive directors in) the board.

Although executives' power depends on the composition of the board in the way that the more effective board, the less power for executives to extract rents; Bebchuk *et al* (2002) argue that an independent director may not be a effective monitor as he/she might follow CEO's wishes because the CEO appointed him/her to the board of directors. This

could cause them to feel a sense of gratitude or obligation to the CEO. Hence, the managerial power theory has contrasting view on the role and effectiveness of non-executive director.

Institutional Shareholdings

Institutional investors have emerged as an important group of shareholders, who seek a more active governance role. Individual shareholders with relatively small shareholdings have little incentive to gather and bear the costs of collecting information to enable them to monitor and control the behavior of management (Stiglitz, 1985). Unlike individuals, institutional shareholders essentially invest their own investors' money and they thus have a legal fiduciary obligation to take proactive actions to protect their investments against erosion in value (Krikorian, 1991). In addition, institutional investors normally hold a substantial number of shares in the invested companies and their high aggregate ownership makes it difficult for them to sell off their shares in response to poor firm performance, as their move may adversely affect the stock price. It is also difficult for institutional shareholders to find appropriate alternate investments, considering that they already own significant stakes in most firms in the economy. The barriers to exit provide institutional shareholders with the incentive to exercise voice in corporate governance, especially to influence pay-setting process for executive directors (David & Kochhar, 1996). In addition, ownership in hundreds of firms provides institutional investors the opportunity to gain economies of scale in monitoring compensation policy (Black, 1992). Through their interactions with various companies in their portfolios, institutions can likely develop the ability to determine whether the compensation policy of a firm is appropriate. Hence, the presence of institutional shareholders with incentives to obtain the information necessary to effectively monitor management should increase the level of monitoring activity. And more

concentrated ownership structure (hares owned by institutional shareholders) should be associated with greater level of monitoring.

According to agency theory, when the level of monitoring increases, the owners (shareholders/board of directors) have more control on the behavior of managers and compensation is less likely to be based on firm performance. As Conyon and Leech (1994) argue, in the presence of alternative and cheaper monitoring devices such as large institutional shareholders, both shareholders and directors may prefer compensation contracts which are not based on firm performance. Hence, according to agency theory, the presence and concentration of large institutional shareholders results in lower level of incentive compensation for executive directors as well as the proportion of incentive pay in total compensation. The managerial power theory (Bebchuk and Fried, 2004) also argues that the presence of institutional shareholders serves to reduce the power of managers to extract rents through compensation. It suggests a negative correlation between the equity ownership of institutional shareholders and the amount of executive compensation. Cyert et al (2002) support this view and show that doubling the percentage ownership of institutional shareholders reduces non-salary compensation by 12-14 percent. Bertrand and Sendhil (2001) find that CEOs in firms lacking large external shareholders, the cash compensation of CEOs is reduced less when their option-based compensation is increased. It is the managerial power perspective, which supports that a higher concentration of shareholders (presence of institutional shareholders) results in a significantly smaller amount of options grants to top executives. Hence, the managerial power theory has same base as the agency theory to suggest that the presence of large institutional shareholders results in lower level of incentive pay as well as lower ratio of incentives in total compensation for executives.

In light of these above arguments on board size, balance of non-executive directors on the board and the presence of institutional shareholders, a single hypothesis can be derived as follow.

H6: *Executive pay components and pay structure are negatively related to the level monitoring and the effectiveness of the board*

4.2 Determinants of Executive Compensation: Tournament Theory

According to tournament theory, as reviewed in Chapter 3, the relative performance and rank-order in organizational hierarchy are the main determinants of executive compensation. The tournament theory, initially developed by Lazear and Rosen (1981a), tried to explain the large disparity in compensation for executives in different level in the organizational hierarchy. Lazear and Rosen (1981a) comment that "On the day that a given individual is promoted from vice-president to president, his salary may triple. It is difficult to argue that his skills have tripled in that one-day period, presenting difficulties for standard theory where supply factors should keep wages in those two occupations approximately equal. It is not a puzzle, however, when interpreted in the context of the prize" (p.847). Lazear and Rosen suggest that, even though the salary of the top executives may well exceed all measures of their marginal product, it can still be economically efficient. The justification is that the high compensation of the CEO acts as an incentive for other lower executives to compete and exert their effort to get promoted. Hence, the higher position in the management hierarchy, not the marginal product, is associated with the higher level of compensation.

However, not simply a positive correlation between rank-order and level of compensation, the tournament theory predicts that there will be an increasing compensation

gap as individuals move up the hierarchical ladder (Conyon, et al., 2001; Lambert, et al., 1993; Main, et al., 1993; Rosen, 1986). In a sequential elimination tournament, agents compete against each other at a given organizational level. On the basis of their relative performance, the winning agents are then promoted to the next level of the hierarchical ladder. Rosen (1986) argues that: "There are many rungs in the ladder to aspire to in the early stages of the game, and this plays an important role in maintaining one's enthusiasm for continuing. But after one has climbed a fair distance, there are fewer rungs left to attain. If top prizes are not large enough, those that have succeeded in achieving higher ranks rest on their laurels and slack off in their attempts to climb higher". Rosen (1986) then concludes that "extra weight on top-ranking prizes is required to induce competitors to aspire to higher goals". Conyon et al (2001) suggest that motivation in the tournament is also provided by the possibility of further (future) job slots in the hierarchy. The value of winning is not only the prize at that level but also includes the possibility to compete for larger prizes at higher levels. However, the option to compete in future rounds diminishes as an individual competitor moves up the organizational hierarchy. To substitute for the loss of option, the compensation for current level should be increase. In sum, tournament models predict that executive compensation is an increasing function of organizational level, or the relationship between executive compensation and organization level is convex. Following empirical support by Lambert et al (1993) and Main et al (1993) based on US data, and Conyon et al (2001) based on UK data, our hypothesis is follow:

H7: *There is convex relationship between executive compensation and organisational level.*

According to the tournament theory, however, the promotion to a higher organisational level is based on the relative performance of the contestants in the competitions. Hence the compensation for executives is rewarded for the relative performance, not the absolute performance. In the composition of executive pay, it is likely

true for cash components (especially salary) rather than for long-term incentive components, which is conditional on firm performance. It thus predicts a stronger convex relationship between organisational level and cash pay than incentive pay. Also, the convex relationship is more likely when the cost of incentives and executive pay to company (nominal prizes for executives following relative performance and rank-order) is used than when is the actual value of incentives/pay to executives (which is conditional on firm performance in subsequent years).

The second models predicted by tournament theory is that the tournament prize is increasing in the number of competitors (see Conyon, et al., 2001; Lambert, et al., 1993; Main, et al., 1993; O'Reilly, et al., 1988). Each tournament participant implicitly gives up some of their expected salary associated with their marginal product or performance (Conyon, et al., 2001). This excess then becomes part of the overall tournament prize for the next organizational level. O'Reilly, Main & Crystal (1988) tested the hypothesis that the larger the number of candidates competing for a CEO position, represented by the number of vice-presidents, the greater would be the disparity in pay between the CEO and other executive levels. However, although they did report a statistically significant result, it was in the opposite direction to that predicted by tournament theory. In their later work, Main, O'Reilly & Wade (1993), do isolate a positive relationship between the number of tournament participants and pay differentials. However, although finding results that were consistent with the operation of tournaments, they concluded that there was little support for the empirical importance of consideration of pay equity at the top of corporations. Further support for tournament theory, Lambert et al (1993), using internal data from 142 companies, show that the differences in compensation between hierarchical levels are consistent with tournament theory. Also, Conyon et al (2001) show that the premium for winning the tournament is increasing in the number of executive directors, again consistent with tournament models. Following the arguments of tournament theory and prior empirical support, the next hypothesis is derived.

H8: *The tournament prize (the gap between compensation levels) is positively related to the number of contestants (number of executives on the board)*

The third testable tournament model, which is suggested by Conyon et al (2001), Bloom (1999) and Main et al (1993), predicts a positive correlation between executive pay dispersion and firm performance. Theoretical tournament models argue that, to induce effort by agents, a relatively large prize (i.e. a gap or variation in pay) is required to motivate contestants. If a large prize (pay gap) induces higher effort by executives then this should be reflected in higher outputs and performance. Bloom (1999) argues that "a wide spread between pay levels increases the returns for higher performance, thus creating a positive pay-performance link and inducing higher future performance"; and "organizations should benefit from the combined effort of high performers and hence, organizational performance should be improved commensurably". Main et al (1993) find a positive effect of the coefficient of wage variation on return on assets, but not on shareholder returns. Eriksson (1999) finds a positive effect of pay dispersion on a performance index. Conyon et al (2001), however, suggest that pay dispersion does not have a robust positive or negative effect on corporate performance. Along with the argument of tournament theory and empirical supports, hypothesis is derived as follow.

H9: *Pay dispersion is positively related to firm performance*

Other prediction of tournament theory is that average pay level of executive team is influenced by pay dispersion. Hypothesis is as follow.

H10: *Average pay level of executive team is positively related to pay dispersion.*

4.3 Conclusion

This chapter has presented theoretical arguments and prior empirical supports for the derived hypotheses on the determinants of executive pay components and structure of executive pay. These testable propositions are developed based on the three main theoretical perspectives: agency theory, managerial power perspective, and tournament theory. The contrasting view between agency theory and managerial power theory is analyzed to develop hypotheses on the determinants of executive pay components and pay structure. According to agency theory and the managerial power perspective, the determinants of executive pay components and pay structure are divided in three groups. The first group of determinants is organizational contingencies including firm performance and firm size. The second group of determinants concerns those individual contingencies such as executive's shares ownership, executive tenure and age of executive directors. Monitoring function of the board of directors (board size, board independence) and the presence of institutional shareholders form the third group of determinants. The hypotheses derived from the view of the tournament theory build up another part of this chapter. According to the tournament theory, executive compensation is determined by their rank-order in the organizational hierarchy. The pay gap between executive levels is increasing with hierarchical ladder, the number of executive directors, and the firm performance.

Along with the prediction of the determinants of executive pay components and pay structure, hypothesis (H2) is also developed to take into account of the difference between the cost of incentive pay to company and the value of such incentive to executive directors. All these hypotheses, to be tested in subsequent chapters, are concentrated on three theoretical perspectives: agency, managerial power and tournament. The testing models, however, will incorporate control variables for the best explanation of the determinants of executive compensation. Details of methodology and measurement of variables are presented in the next chapter.

Summary of developed hypotheses are presented in the following table.

Table 4-1: Summary of testable hypotheses

Hypotheses	*Description*
H1	Executive pay components and executive pay structure are positively related to firm performance
H2	The relationship between firm performance and executive compensation is affected by the use of cost pay or pay value as measures of executive pay
H3	Executive pay components and pay structure are positively related to firm size
H4a	Executive pay components and pay structure are negatively related with executive shareholdings
H4b	Executive pay components and pay structure is positively related with executive shareholdings
H5	Executive pay components and pay structure are positively related to executive tenure and executive age
H6	Executive pay components and pay structure are negatively related to the level monitoring and the effectiveness of the board
H7	There is convex relationship between executive compensation and organisational level
H8	The tournament prize (the gap between compensation levels) is positively related to the number of contestants (number of executives on the board)
H9	Pay dispersion is positively related to firm performance
H10	Average pay level of executive team is positively related to pay dispersion.

Chapter 5
RESEARCH METHODOLOGY AND DATA DESCRIPTION

5.0 Introduction

This chapter presents the methodology to be adopted in conducting this research. It also describes the measurement of variables and characteristics of the sampled firms, which are used for empirical analyses. As this study seeks to address the following broad research question: 'What is the nature of the relationship between executive compensation, corporate governance and performance?', it is expected that the study is conducted within deductive approach following the philosophy of positivism. Accordingly, theories and prior literature are reviewed (as described in Chapter 3), deducing hypotheses are discussed and developed (Chapter 4), quantitative data and analyses are used to test the presented hypotheses. In this study, panel data will be collected and multiple regression analyses using panel data are employed to test the presented hypotheses. In addition, Arellano-Bond General Method of Moments (GMM) is also used to further examine the dynamic effect of panel data.

This chapter is organised as follows. Section 5.1 discusses panel data analyses with the fixed and random effects models as well as the dynamic panel data analysis using Arellano-Bond GMM estimator. Section 5.2 presents the basis and rationale for the selection of sample used in this study. Section 5.3 discusses the measurement of executive pay variables, performance variables and governance variables. The descriptive analyses of executive pay and other governance variables are presented in section 5.4. Finally, section 5.5 presents a conclusion.

5.1 Panel data analysis

Quantitative analysis have three traditional forms: (1) *time-series analysis*, which would in principle require investigations to be conducted over a relatively long period of time, probably with the use of limited samples (see Sekaran, 2000); (2) *cross-sectional analysis*, which are designed to obtain information on variables in different contexts, with the aid of large samples, often over a short period of time (see Hussey and Hussey, 1997); and (3) *panel data analysis*, which helps to estimate more complicated models and to achieve more flexibility in modeling the differences in behavior across individuals (Green, 2003). Cross-sectional distributions, which look relatively stable, hide a multitude of changes and may not give a full explanation of results. On the other hand, time series studies are often plagued with the problem of serial correlation in the error term. Also, modern time series work particularly concerns with the stationarity, or otherwise, of the variables to be included to avoid problems of spurious correlation. Time series analysis is also subject to multi-collinearity and not controlling for individual heterogeneity, which may run the risk of producing biased results. In addition, the sample data to be collected in this research has short time intervals of five years, which is not appropriate to use time series analysis. Hence, panel data analysis is likely an appropriate method to be used in this study.

A number of benefits from using panel data have been listed by Hsiao (1985), Klevmarken (1989), Solon (1989) and Baltagi (1995). *Firstly*, it controls for individual heterogeneity, which may cause biased results in time series and cross-sectional studies. *Secondly*, panel data give more informative data, more variability, less collinearity among the variables, more degree of freedom and more efficiency in comparison with time series studies. *Thirdly*, it is better used in studying the dynamics of adjustment with observations over a period of time, whilst, cross-sectional distributions hide a multitude of changes. *Fourthly*, panel data are better able to identify and measure effects that are simply not detectable in pure cross-section or pure time-series data. *Finally*, more complicated

behavioral models are better-constructed and tested using panel data rather than purely cross-sectional or time-series data.

Since the panel data analysis captures both the cross-sectional and the time-series dimensions, the basic framework for discussion is a regression model of the following form:

$$y_{it} = \beta x_{it} + z_i \alpha + \varepsilon_{it} \qquad (5.1)$$

Where the firm number $i = 1,2,...N$ and time period $t = 1,2,...T$. There are K regressors in x_{it}, not including a constant term. The heterogeneity or individual effect is $z_i \alpha$ where z_i contains a constant term and a set of individual or group specific variables, which may be observed or unobserved, and all of which are taken to be constant over time t (Greene, 2003). As it stands, this model is a classical regression model. If z_i is observed for all individuals, or all the regression coefficients are constant, then the entire model can be treated as an ordinary linear model (or pooled model) and fit by least squares. However, this is unlikely to happen in the panel data analysis where z_i is unobserved for all individuals. The Pooled Ordinary Least Squares Regression, then, will not take into account of serial correlation in the disturbance term, which is resulting in inefficient and inconsistent estimates. Panel data analysis offers alternative estimation methods: the Fixed Effects estimation and the Random Effects estimation.

5.1.1 The Fixed Effects Model

The fixed effects model assumes that differences across units can be captured by differences in the constant term, allowing the intercepts to vary across individuals rather than over time. The heterogeneity, or individual effects, z_i in Equation 5.1 is unobserved but correlated with x_{it}. The fixed effects model is formulated as:

$$y_{it} = \alpha_i + \beta x_{it} + \varepsilon_{it} \qquad (5.2)$$

In the fixed effects model, the intercept (α_i) is different across firms; the differences may be due to special features of each company such as managerial style or managerial philosophy (Gujarati, 2003). However, each individual intercept does not vary over time; that is, it is time invariant. The slope coefficient (β) is assumed to be constant across individuals or over time. The fixed effects estimator, then, uses a transformation to remove the unobserved effect α_i prior to estimation. To estimate the fixed effects (i.e. to allow for the fixed effect intercept to vary between individuals), the dummy variable technique is used, particularly the differential intercept dummies. Thus the fixed effects model is also known as the least-square dummy variable (LSDV) model, which is also a classical regression model.

$$y_{it} = \alpha_1 + \alpha_j D_{ji} + \beta x_{it} + \varepsilon_{it} \qquad (5.3)$$

(where: j=2,3,..,n; D_{ji} = 1 if the observation belongs to firm j^{th}, 0 otherwise)

The fixed effects model assumes the intercept (α_i) to change across units rather than over time. To account for time effect, we can use the dummy variables (time dummies) just as the one used to account for individual effect. However, the use of too many dummy variables results in the degrees of freedom problems and the possibility of multicollinearity. Moreover, the LSDV approach may not be able to identify the impact of time-invariant variables included in the model. Also, the fixed effects model assumes that the error term (u_{it}) follows the classical assumptions $u_{it} \sim N(0,\delta^2)$, which may not be applied in the model. To deal with these problems, the random effects model can be used.

5.1.2 The Random Effects Model

The random effects model is used when the heterogeneity, or individual effect, is unobserved and assumed to be uncorrelated with the included variables. It assumes that the individual specific terms (α_i) are randomly distributed with a mean value of α (i.e. $\alpha_i = \alpha + u_i$; where u_i is a random error term with a mean value of zero and variance of σ_u^2) and is formulated as:

$$y_{it} = \beta x_{it} + \alpha + u_i + \varepsilon_{it} \qquad (5.4)$$

The usual assumptions of the Random Effects estimation are that individual error components (i.e. u_i & ε_{it}) are not correlated with each other and are not autocorrelated across both cross-section and time series units (Gujarati, 2003). When the random intercept of each firm is uncorrelated with regressors (i.e. $\text{Cov}(x_{it}, u_i) = 0$), the Random Effects model is considered the appropriate estimation method and the Random Effects estimates will be more efficient than those obtained by the Fixed Effects model. However, the condition of independence between individual error component (u_i) and regressors (x_{it}) does not usually hold. The random effects estimation, hence, makes stricter assumptions about the nature of effects.

5.1.3 Model selection – Sargan Test

The challenge facing a researcher is: which model is better, the fixed effects or the random effects model (Gujarati, 2003). The answer to this question hinges around the assumption about the likely correlation between the individual error component (u_i) and the regressors (x_{it}). If u_i and the x_{it} are uncorrelated, the Random Effects model may be

appropriate; whereas if u_i and the x_{it} are correlated, the Fixed Effects model may be appropriate.

It is possible to test for the appropriateness of using the fixed effects estimation or the random effects estimation. Baltagi (1995) confirmed that the Hausman' (1978) specification test (hereafter, Hausman Test) can be used to decide between employing the Fixed Effects model or the Random Effects model. The null hypothesis of the Hausman test is that there is no correlation between the regressors and the firm effects (H_0: $Cov(x_{it}, u_i) = 0$) and the Random Effects can be assumed. The alternative hypothesis is H_1: $Cov(x_{it}, u_i) \neq 0$ and the Random Effects cannot be assumed. Hence, if the Hausman test statistic is significant, the Random Effects estimation is inconsistent and Fixed Effects estimation should be used.

5.1.4 Dynamic Panel Data: Arellano-Bond GMM estimation

Panel data are well suited for examining dynamic effects (Baltagi, 1995; Greene, 2003). One way to allow for dynamic effects in panel data models is by the inclusion of a lagged dependent variable (first differencing). However, it is well-known that the introduction of the lagged dependent variable will generally mean that standard estimators are biased and inconsistent (Greene, 2003). Specifically, biased and inconsistent estimates result from the expected serial correlation between the error term and the lagged dependent variable in the model.

$$y_{it} = \alpha_i + \beta x_{it} + \gamma y_{i,t-1} + \varepsilon_{it} \qquad (5.5)$$

The inclusion of the lagged dependent variable in the model, in both the fixed and random effects settings, leads to substantial complications in the estimation due to the correlation

between the lagged dependent variables and the error term even if it is assumed that ε_{it} is not itself autocorrelated (Greene, 2003). To deal with this problem, the general approach relies on instrumental variables estimators and on a GMM estimator. In either the fixed or random effects cases, the heterogeneity can be swept from the model by taking first differences, which produces:

$$(y_{it} - y_{i,t-1}) = \beta(x_{it} - x_{i,t-1}) + \gamma(y_{i,t-1} - y_{i,t-2}) + (\varepsilon_{it} - \varepsilon_{i,t-1}) \qquad (5.6)$$

However, the explanatory variable $(y_{i,t-1} - y_{i,t-2})$ in Equation 5.6 is still correlated with $(\varepsilon_{it} - \varepsilon_{i,t-1})$. To get rid of that, Anderson and Hisao (1981) suggest using either $\Delta y_{i,t-2} = (y_{i,t-2} - y_{i,t-3})$ or $y_{i,t-2}$ as an instrument for $(y_{i,t-1} - y_{i,t-2})$, which is not be correlated with $\Delta\varepsilon_{it} = (\varepsilon_{it} - \varepsilon_{i,t-1})$ if the ε_{it} is not serially correlated. This instrumental variable (IV) estimation method leads to consistent but not necessarily efficient estimates of parameters in the model because it does not make use of all the variable moment conditions and it does not take into account the differenced structure on the residual disturbances (Baltagi, 1995).

Arellano and Bond (1991) improved the estimates of Anderson and Hisao (1981) to achieve a more efficient estimation by using the orthogonality that exists between the lagged dependent variable and the error term. Arellano-Bond (1991) argued that consistent estimation could be attained by utilising the Generalised Method of Moments following moment restriction when the number of the observation is large and the number of time periods is small. The Arellano-Bond methodology starts with taking the first difference to eliminate the individual effects as the $\Delta\varepsilon_{it} = (\varepsilon_{it} - \varepsilon_{i,t-1})$ is the first-order moving average. In the next step, the values of the lagged dependent variables will be used as instruments. For example, in Equation 5.6, as $y_{i,t-2}$ is highly correlated with $(y_{i,t-1} - y_{i,t-2})$ but not correlated with $(\varepsilon_{it} - \varepsilon_{i,t-1})$, then it can be considered a valid instrument for $(y_{i,t-1} - y_{i,t-2})$. In a similar vein, both $y_{i,t-3}$ and $y_{i,t-2}$ are valid instruments for $(y_{i,t-1} - y_{i,t-2})$. Overall, for the time period T, the valid instruments are $y_{i1}, y_{i2}, \ldots, y_{i,T-2}$ (Baltagi, 1995).

Arellano and Bond (1991) propose testing for the second-order serial correlation based on residuals from the first difference equation. Hence, the Arellano-Bond GMM estimates will be consistent in the absence of second-order serial correlation in the error term of the first difference model. In the test of autocorrelation (AR), the first-order autocorrelation is expected (i.e. AR1 test statistic should always be significant) due to the fact that Arellano-Bond GMM regression runs on first differences. The second-order Arellano-Bond test statistic AR(2) is used to test the autocorrelation in the models. If the Arellano-Bond test statistic is insignificant, there is no autocorrelation in the regression models and thus the estimates are unbiased. Arellano and Bond (1991) also suggest that in the absence of the serial correlation of the error term, the estimates of the OLS and GMM of the first differenced model would be consistent. Furthermore, the Sargan's (1958) test of over-identifying restrictions is used to test for the validity of the GMM estimator.

5.1.5 Implications of Panel Data Analysis

Following the above discussion, the panel data analysis technique will be used to estimate the determinants of executive pay components and structure of executive pay in Chapter 6 as well as to test the predictions of tournament theory in the context of executive compensation in Chapter 7. The proposed models of executive pay determination are firstly estimated using the fixed effects estimation. Second, the random effects estimator is used to estimate the proposed models. To decide between the fixed and random effects models, the Hausman test will be performed. The significant value of the Hausman test statistic establishes that the random effects estimator is inconsistent and the fixed effects estimator should be used. The results of the empirical analysis will present only the consistent estimation method (the fixed or random effects estimator) along with the results of Hausman test statistics.

To further account for the dynamic effects in the proposed models, the Arellano-Bond GMM estimator is used. The empirical results of the Arellano-Bond GMM estimates will be reported if there is no second-order autocorrelation suggested by the Arellano-Bond order two test statistics and the instruments are valid suggested by the Sargan test statistics.

The proposed models examining the predictions of tournament theory in the context of executive compensation are also tested using the fixed and random effects estimators. The Hausman test will decide which models are used.

5.2 Sample selection

The sample was selected from the UK firms quoted on the Official list of the London Stock Exchange comprising the FTSE-350 index for the period 2001 to 2005. The choice of the FTSE-350 companies is because the agency problems are likely to be most severe in large firms, which are subject of corporate governance reforms. FTSE-350 companies are also representative of the UK capital market accounting for more than 90 percent of market valuation. Time period is collected from 2001 to 2005 due to the availability of data. According to the Directors' Remuneration Report Regulations (2002), it is mandatory that a listed company publishes a detailed remuneration report as part of their annual reports on or after 31st December 2002. Because of the requirement to disclose comparative information, companies' annual reports also present data on executive remuneration for the financial year 2001.

The list of companies comprising FTSE-350 index is taken from the London Stock Exchange website on 31 October 2006. In order to be included in the sample, the firms had to be quoted on the Official list for at least a year before the date of their financial year end for 2001. This condition was imposed in order to ensure that corporate governance, executive pay and firm performance were not affected as a result of a new listing. Also, only those firms listed on the Official list of the London Stock Exchange for full five-year period from 1999 to 2003 are selected to ensure balanced and consistent data. Moreover, the sample excluded those firms operating in the *financial sector* (i.e. banks, investment companies, insurance and life assurance companies and investment trusts), and *real estate* sector. This is deemed necessary because these firms are, in general, subject to different set of regulatory accounting and taxation considerations. Given the above issues, the whole population for the data in this study was reduced from 350 to 185 firms across 9 industries.

Due to the labour-intensive nature of options/LTIPs valuation, which limits the length of the panel, the sample of 50 firms was then selected randomly from these 185 firms over the five-year period from 2001 to 2005. This results in a balanced sample of total 250 firm-year observations for firm-level variables (i.e. firm performance, governance variables, and control variables). For each company in each year from 2001 to 2005, the remuneration data are collected for all executive members of the board of directors. This results in an unbalanced sample of 345 executive directors with up to five years from 2001 to 2005. The total executive-year observations of this sample are 1,137 consisting of comprehensive data on executives' remuneration and individual variables.

Table 5-1: Distribution of firms by industry classification

No.	*Industry*	*% of population*	*FTSE 350*	*Sample*	*Coverage*	*% of total sample*
1	Oil & Gas	6%	11	4	36%	8%
2	Basic Materials	7%	12	3	25%	6%
3	Industrials	31%	58	14	24%	28%
4	Consumer Goods	16%	30	8	27%	16%
5	Health Care	3%	5	1	20%	2%
6	Consumer Services	27%	50	15	30%	30%
7	Telecommunications	2%	3	2	67%	4%
8	Utilities	5%	10	1	10%	2%
9	Technology	3%	6	2	33%	4%
Total		**100%**	**185**	**50**	**27%**	**100%**
	Financials (omitted)		102			
	Companies listed after 2000		63			
Total FTSE-350			**350**			

All the data on executive remuneration, corporate governance variables and executives' individual variables are collected manually from companies' annual reports. Companies' annual reports are a common resource tool when examining executive compensation and corporate governance details, which are cheaply accessible and open to public scrutiny (Main and Johnston, 1993). Companies' annual reports are also reliable and popular sources of compensation data due to the low response rates from compensation departments of large public companies (Eskew and Watson, 1998). Particularly, the Directors' Remuneration Report Regulations (2002) required quoted companies to prepare a Director Remuneration Report, which complies with the Regulations, for each financial year containing detail information on the remuneration for each executive directors, some of which required to be audited. Hence, the compensation data collected from companies' annual reports are quite sufficient and reliable for the analysis. The information on corporate performance is collected from Datastream.

5.3 Measurement of variables

This section provides some justification for adopting particular variables to be used in the empirical analysis in subsequent analysis chapters and the measurement of these variables.

5.4.1 Executive Compensation Measures

Executive compensation is normally comprised of basic salary, annual bonuses and long-term incentives (including share options and LTIPs). In this analysis, the variables of interest are (1) cash compensation, which is the sum of salary, annual bonuses and other benefits in kinds; (2) long-term incentive pay, which includes share options and LTIPs; and (3) total compensation, which is sum of cash compensation and long-term incentive pay. The variables of long-term incentive pay and total executive pay are measured both at cost to company and their value to executive directors. The measurement of these variables is discussed as follows.

- **Cash Compensation**

Cash compensation includes salary, annual bonuses and other benefits in kind. Salary and other benefits in kind are those payments made to executive directors that reported in the annual reports. As salary is relatively 'fixed component' in the employment contracts, salary for an executive in their first or last year at the firm will be measured by his/her annual salary. Annual bonuses figure refers to the short-term aspects of bonus pay and reflects actual bonus payment reported in the annual reports. Due to skewness in the distribution of executive cash pay, the natural logarithm of executive cash pay is used in this analysis.

- **Long-term Incentive Pay**

Long-term incentive pay to an executive director is normally in forms of share options, LTIPs, or both share options and LTIPs. The valuation of long-term incentives, hence, includes the valuation of share options and the valuation of LTIPs. Buck et al (2003) proposed a multi-period valuation method, which values an LTIP or option scheme, normally with standard three-year plan duration, equal to one third of the provisional final value of award assuming current performance maintained. In this study, however, long-term incentives in one year is deemed the incentives (share options and/or LTIPs) granted in that particular year. The first reason is that both cost of incentives to company and value of incentives to executive-recipients are calculated; and the cost of incentive pay has immediate effect on shareholders, which deteriorate diluted earnings, not spreading out in there-year period. Second, the availability of data prevents the application of multi-period method. The remuneration data prior to 2001 are not available in detail from companies' annual reports as they are not required to do so. The third reason is due to the fact that most companies did try to grant their executives long-term incentive awards annually. In this study's sample of 345 executives from 50 companies, there are only 38 executives (11%) fail to receive long-term incentive in subsequent years[9] following the introduction of the plans. Hence, it is not unreasonable assumption that the amount of long-term incentives granted in the financial year is representative for the cost and value of incentive pay in that year.

Following the discussion in Chapter 3, the cost of executive share options to company is measured by the Black-Scholes formula (Murphy, 1999). The standard formula as reminded from Chapter 3 is as follow.

[9] This excludes executives who leave the company in the year of the plans and are not eligible to receive the awards.

$$Option\ Value = Pe^{-\ln(1+d)T}N(z) - Xe^{-\ln(1+r)T}N(z-\sigma\sqrt{T})$$

where P is the grant-date share price, X is the exercise price, T is the time remaining until expiration, d is the annualized dividend yield, σ is the stock-price volatility, r is the risk-free discount rate, $N()$ is the cumulative normal distribution function, and z is calculated as follows.

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

The detail information on number of options granted, exercise price, grant date, expiry date are collected from companies' annual reports. Grant-date share price is collected from Datastream. Risk free rate for 5 years from 2001 to 2005 is five-year nominal yield from British Governance Securities disclosed by the Bank of England. Stock volatility is calculated from historical share price of the company. The average stock volatility of the sampled companies in five years from 2001 to 2005 is 33.6%, which is approaching with the stock volatility of 31.8% for US companies reported by Hall and Murphy (2002). Dividend yield is calculated as the dividend per share in the year divided by year-end share price of the company. The Black-Scholes' valuation of the share options is then calculated using macro-embedded excel sheet created by Hall and Murphy (2002). The cost to company of share options granted to an executive in one year is calculated as the number of options granted multiplies by the value of one options generated by the Black-Scholes formula.

The value of share options to risk-averse and undiversified executive-recipients, however, is much lower than the Black-Scholes' valuation of share options (Hall and Murphy, 2000; Murphy, 1999). To estimate the value of a non-tradable option to an

undiversified risk-averse executive, Hall & Murphy (2000) have proposed additional inputs to Black-Scholes formula including company's beta value, market risk premium, executive's wealth, percentage of executive's wealth held in company's stock and executives' risk aversion score. However, it is practically difficult to collect data on executive's wealth, percentage of wealth held in company's stock and the degree of risk aversion for each executive as suggested by Hall and Murphy for the modified Black-Scholes valuation. In addition, most executive share options in the UK are granted subject to performance conditions, which subsequently reduce the value of share options granted. Accordingly, this analysis values a non-tradable option to an undiversified risk-averse executive as its cost to company (i.e. the valuation amount estimated by Black-Scholes formula) multiplying by the percentage of options to be vested subject to performance hurdles. The vesting percentage of options is normally disclosed in companies' annual reports in subsequent years (mostly three years after the granting year). Hence the actual vesting percentage of executive share options granted from 2001 to 2005 is collected from companies' annual reports in 2003 to 2008 (if available). For companies that do not disclose the information on vesting of prior year executive share options; the vesting percentage is estimated according to the performance criteria specified in the plan.

Long-term incentive plans (LTIPs) are grants of cash or shares (usually the latter) that become 'vested' only upon attainment of certain performance conditions. The cost of LTIPs to company is measured as the face value of shares granted (i.e. number of shares granted under LTIPs multiplies by the share price on grant date). This measure assumes that all performance conditions will be met and the entire shares under LTIPs will be vested in the future. In most case, this will be the maximum measurement of LTIPs. This is not an unreasonable assumption from the point of view of shareholders and companies, who have to provide provisions for these contingent payments. The cost to shareholders also includes deterioration of diluted earnings (especially diluted EPS).

The value of an LTIP scheme to executive directors is estimated by evaluating performance conditions attached to the plan. For any particular year, the valuation of an LTIP scheme is calculated as follow. First, the performance of the company for the scheme's period is measured, using the performance criteria specified in the scheme, from subsequent years' annual reports (normally three years from the beginning of the granting year). For example, an LTIP scheme granted in the financial year 2001 generally has three-year performance period starting from the beginning of the accounting year 2001 to the end of the accounting year 2003. Hence, company's performance for the scheme's period can be collected from company's annual report 2003. Similarly, performance conditions for the plan granted in 2005 are measured and can be calculated from company's annual report 2007. Second, the performance measures are compared with the performance of companies in the comparator group as defined by the plan. This comparison generates an actual level of vesting for the specified LTIP plan. This valuation is generally similar to the method used by Buck et al (2003), who also compare performance measures with those of companies in the comparator group to generate a provisional level and value of award (based on year-end share price). In this study, however, the valuation of an LTIP plan is estimated using the share price on the grant date. Specifically, the cost of an LTIP plan is equal to the number of share granted multiplying by the calculated vesting level and the share price on the date of grant. It is not unreasonable to use the grant date share price rather than later years' share price because it represents current cost of award.

With the effect of the Directors' Remuneration Report Regulations (2002), most companies publish a detail remuneration report (attached to the annual report) with a comparison of company's performance with that of the comparator group for the last five years. In addition, many companies also report the level of vesting of previous executive LTIP plans that due in that financial year. This provides great assistance to evaluate performance conditions and estimate actual vesting level of LTIP plans. For those companies and years that reported vesting level is available, the value of an LTIP plan to

executives is simply calculated as production of number of shares granted, grant date share price, and reported vesting level without further calculation of performance measure and comparison with that of the comparator group.

In sum, the cost of long-term incentive pay to company is calculated as sum of cost of options (which is estimated using Black-Scholes formula) and the cost of LTIPs (nominal value of LTIPs at the grant date). The value of long-term incentive pay to executives is sum of value of options and value of LTIPs, which is estimated by measuring performance conditions specified in the plans, using subsequent years' performance information. The value of LTIPs is calculated as the number of shares granted under the plan multiples by the share price at the grant date and multiplies by the vesting percentage estimated/reported for the LTIP plans. Again, due to skewness in the distribution of incentive pay, the natural logarithm of incentive pay (both cost and value of incentive pay) is used in this analysis.

- **Total Executive Compensation**

Total executive pay is simply the sum of cash pay and long-term incentive pay. As there are two measures of incentive pay (i.e. cost of incentive pay to company and value of incentive pay to executive), total pay is also measured in cost of total pay to company and value of total pay to executive. The natural logarithm of total executive pay is used to control for the skewness in the distribution of executive pay.

- **Pay Gap**

Pay gap is described as the difference in pay between CEO and other executives in the board of directors. In this analysis, pay gap is measured as the log of CEO pay minus the log of average pay received by non-CEO executive team. This procedure is consistent with O'Reilly et al (1988), Main et al (1993), Eriksson (1999), and Conyon et al (2001). As there

are three different components of executive pay (i.e. cash pay, long-term incentive pay, and total pay), which is measured in both cost to company and value to executive; pay gap is also measured in five different ways.

CPGAP = log (CEO cash pay) – log (average of other executives' cash pay)

ICPGAP = log(CEO incentive cost pay) – log(average of other executives' incentive cost pay)

IPVGAP = log(CEO incentive pay value) – log(average of other executives' incentive pay value)

TCPGAP = log(CEO total cost pay) – log(average of other executives' total cost pay)

TPVGAP = log(CEO total pay value) – log(average of other executives' total pay value)

- **Average Executive Pay**

Average pay is the average of total pay received by the executive team (i.e. all executive members in the board of directors). This measure is used to examine the relationship between executive pay and pay dispersion or firm performance as suggested by tournament theory. This measure is in line with Main et al (1993) and Eriksson (1999). Due to skewness of distribution, the variable is measured in natural logarithm form.

- **Pay dispersion**

Pay dispersion is constructed as the coefficient of variation of total pay for the executive team. The coefficient of variation is defined as the ratio of the standard deviation (σ) to the mean (μ) of compensation of executive team (i.e. all executives in the board of directors including the CEO).

$$c_v = \frac{\sigma}{\mu}$$

5.4.2 Measurement of performance variables

- **Total Shareholder Return (TSR)**

Shareholder returns is a market measure of firm performance that is defined as the total returns per common share. The returns per ordinary share include dividends per share (which is sum of interim dividend and final dividend) and share price appreciation gained during the financial year.

$$TSR = \frac{(P_1 - P_0) + DPS}{P_0}$$

where P_1 is share price at the end of the financial year; P_0 is share price at the beginning of the financial year; DPS is dividend per share (which includes both interim dividend per share and final dividend per share). TSR is a primary benchmark for shareholders and investors to assess firm performance. It is a relative performance that can be used to compare the performance of different companies and over time. The information on share price and dividend per share are collected from Datastream.

- **Tobin's Q**

Tobin's Q is another market measure of firm performance developed by Tobin (1969). It is a ratio of the market value a listed company's stocks to the value of company's equity book value. Previous studies, however, show different ways in measuring Tobin's Q ratio, which are summarized in the Table 2 below.

Table 5-2: Different measurements of Tobin's Q ratio

Authors (year)	*Definition of Tobin's Q*
Yermack (1996)	$\text{Tobin's Q} = \frac{\text{Market value of assets}}{\text{Replacement cost of assets}}$
Short & Keasey (1999)	Using Valuation Ratio (VAL) as a UK approximation to Tobin's Q ratio. $\text{VAL} = \frac{\text{Market value of equity at the accounting year-end}}{\text{Book value of equity at the accounting year-end}}$
Carter *et al* (2003)	Tobin's Q is calculated using method suggested by Chung & Pruitt (1994)[6], which is as follow: $\text{Approximate Q} = \frac{\text{MVE} + \text{PS} + \text{DEBT}}{\text{TA}}$ *Where*: - ***MVE***: is the product of a firm's share price and the number of common stock shares outstanding - ***PS***: is the liquidating value of the firm's outstanding preferred stock - ***DEBT***: is the value of firm's short-term liabilities net of its short-term assets, plus the book value of firm's long-term debts - ***TA***: is the book value of the total assets of the firm

As there are important differences between the US and UK governance systems (Short & Keasey, 1999), the measurement of Tobin's Q, which is generally measured by the market value to book value of equity ratio, is also expectedly different. As this study is doing empirical analysis using data from UK listed firms; a Tobin's Q follows UK approximation is better measurement. The definition of Tobin's Q ratio used in this study is as follow:

$$\text{Tobin's Q} = \frac{\text{Market value of equity at the accounting year-end}}{\text{Book value of equity at the accounting year-end}}$$

More specifically, it can be measured using the following accounting information, which is extracted from Datasteam.

$$\text{Tobin's Q} = \frac{\text{MVE} + \text{DEBT}}{\text{TA} - \text{CL}}$$

Where:

- ***MVE*** is the market value of equity (i.e. market capitalisation)
- ***DEBT*** is the value of long-term debts, (i.e. total loan capital repayable after 1-year). It includes debentures, bonds, convertibles, and 'debt like' hybrid financial instruments
- ***TA*** is total assets
- ***CL*** is total current liabilities, which includes current provisions, trade and other creditors, borrowings repayable within 1-year and any other current liabilities. Trade accounts payable after 1-year are also included

[10] See Chung & Pruitt (1994), A simple approximation of Tobin's Q, *Financial Management*, 23, 70-74

- **Earnings Per Share (EPS)**

Earnings per share are the earnings after tax in one financial year distributed to one ordinary share. EPS is measured as the ratio of total earnings after tax but before dividends to the weighted average of ordinary shares in the financial year. EPS is extracted from Datastream.

$$\text{Earnings per share} = \frac{\text{Net Income}}{\text{Weighted Average Common Shares}}$$

- **Return on Capital Employed (ROCE)**

Return on capital employed is a measure of the returns that a company is realizing from its capital employed. It is commonly used as a measure for comparing the performance between businesses and for assessing whether a business generates enough returns to pay for its cost of capital.

$$\text{ROCE} = \frac{\text{Earnings before interests and taxes}}{\text{Total Capital Employed + Short-term borrowing - Intangible assets}}$$

5.4.3 Measurement of governance variables and control variables

- **Board size**

The size of the board is measured as the number of directors present on the board at the end of the accounting year. The members of the board of directors are extracted from companies' annual reports. Previous studies use different proxies for board size variable. While Yermack (1996) uses natural logarithm of the size of the board; Eisenberg *et al*

(1998) uses log log transformation of board size to make the distribution of the board size variable more symmetric. Recent studies by Singh & Davidson (2003) and Erhardt *et al* (2003) use the number of board members as proxy for board size. In this study, to ensure a symmetric distribution of variable, a natural logarithm of board size is used to proxy for this variable.

- **Percentage of non-executive directors**

Percentage of non-executive directors is defined as the ratio of the number of non-executive directors to the total members of the board. This measure is consistent with previous studies (Coles *et al*, 2001 and Singh & Davidson, 2003). The role of non-executive directors in the corporate governance debate is emphasized by the Cadbury Committee (1992) and the Higgs Report (2002). Information on the number of executive and non-executive directors was extracted from companies' annual reports. The companies' description of the status of the director was used to distinguish between executive and non-executive directors.

- **Institutional shareholdings**

Institutional shareholdings are defined as the total percentage holding of institutional shareholders owning 3% or more shares in the company. Institutional ownership data are extracted from the annual reports of the sample companies from the years 2001 to 2005. The available data on ownership interests contained in the annual report is determined by the Companies Act 1985 that details of external interests which amounted to 3% or more of issued ordinary share capital were required to be disclosed.

- **Executive ownership**

Executive ownership is measured as the percentage of equity shares owned by executive directors at the accounting year end. Hence, this variable has the range from 0 to 100 percent. This definition of executive ownership is consistent with that of Morck *et al* (1988) and Short & Keasey (1999). These shareholdings include both beneficial and non-beneficial shares held by directors at the end of the accounting year. The information on executive ownership is also extracted from company's annual report.

- **Executive Tenure**

Executive tenure is measured by the number of years an individual had been on the current executive position. This measure is consistent with that used by Hill and Phan (1991). The information on executive tenure is collected from company's annual report. In the annual report, only the number of years an executive stays on their current position is considered as executive tenure, not number of years working for the company or number of year staying on the board of directors.

- **Executive Age**

Executive age is another proxy for experiences of executive directors. It is measured by the number of years of executive age that is reported in the company's annual report. This measure is consistent with Hill and Phan (1991), who identify that executive age is one of important human capital proxies for explaining executive compensation.

- **Firm size**

There is a considerable consensus among previous research regarding the measurement of size. Among those, total sales and total assets are two dominant measures of firm size. Other measures of firm size include market valuation, number of employees,

capital employed, etc. This study employs natural logarithm of market valuation as the measure of firm size. This is due to the fact that companies are included in the FTSE-350 index (this study's data sources) based on their market valuation. The information on market valuation is extracted from Datastream.

5.4 Descriptive Analyses

5.4.1 Analysis of Executive Pay

Summary statistics for the remuneration variables of executive directors of the sample companies are presented in Table 5-3. All variables in Table 5-3 are shown as averages over the five-year period 2001-2005. Key observations from this table are presented below. Across the sample period, the mean salary is £346,680 and the mean bonus is £231,860, which makes total cash-compensation is average of £635,030 a year. The total compensation of executive directors is average at £952,680 a year, including the vested amount of options and LTIPs (the options/LTIPs to be received by executives after accounting for performance conditions). The comparative information can be referred to Buck, Bruce *et al* (2003), who did report an average executive pay of £532,586[11] (total rewards include detailed LTIP valuations) in the year 1997-1998, based on observations of 1,602 executive directors in 287 non-financial FTSE-350 companies. This shows an increase of 80% in remuneration for executive directors in a short time period. Conyon et al (2001) also report an average total compensation of £555,030[12] for 532 executive directors in 100 companies drawn from the 150 largest UK stock market companies in 1997-1998. However, Conyon et al (2001) estimate the value of LTIPs by simply discounting the maximum value by 20% to reflect contingent performance conditions.

[11] Buck et al (2003) actually reported mean of Ln(total rewards) = 13.1855, it can be worked out that 'total rewards' is equal to $e^{13.1855}$ = 532,586 (£)

[12] Conyon et al (2001) report mean total compensation for 100 CEOs is 828,571 and other 432 executives are £561,567 (for divisional CEOs) and £421,771 (for other executive directors). Assume equal number of divisional CEOs and other executives, this works out an average total pay of 532 executives is £555,030.

Table 5-3: Summary Statistics of Executive Compensation

Variables	*Mean*	*Median*	*SD*	*Min*	*Max*
Salary (£'000)	364.68	313.68	201.12	62.00	1,728.00
Bonus (£'000)	231.86	117.00	358.15	0.00	5,783.00
Benefit (£'000)	38.45	18.12	86.82	0.00	1,411.00
Cash Pay (£'000)	635.03	476.00	534.04	78.00	6,883.00
Cost of Options (£'000)	233.73	66.85	739.91	0.00	11,300.00
Cost of LTIPs (£'000)	340.71	147.50	961.02	0.00	23,800.00
Cost of Incentives (£'000)	574.44	262.83	1,337.27	0.00	23,759.14
Total Pay at Cost	1,209.47	749.27	1,743.40	78.00	26,178.14
%Incentives-Cost/Total Pay at Cost	32.4%	35.1%	22.5%	0.0%	91.9%
Options Value (£'000)	166.07	0.00	492.16	0.00	7,130.89
LTIPs Value (£'000)	163.00	0.00	416.24	0.00	7,599.71
Incentive Pay Value (£'000)	329.07	122.81	743.17	0.00	10,229.21
Total Pay Value (£'000)	952.68	633.10	1,168.27	78.00	17,112.21
%Incentive value/Total Pay value	22.5%	22.2%	20.5%	0.0%	90.4%
% Value to executives/Cost to company					
- For Options	79.9%	100.0%	37.9%	0.0%	100.0%
- For LTIPs	54.1%	53.9%	38.4%	0.0%	100.0%
Total Incentives	65.4%	76.7%	36.2%	0.0%	100.0%
Total executive pay	87.5%	100.0%	16.9%	8.1%	100.0%

The median total compensation value of the sample executives, however, is much lower at £633,100 (compared to mean of £952,680) a year with a minimum value of £78,000 to a maximum of over £17 millions. The median cash pay is also lower at £476,000 (compared to the mean of £635,030). In addition, the standard deviation is very high compare to the mean value of pay. The coefficient of variation of total pay value is 1.23 (i.e. equal to £1,168,270/£952,680), cash pay is 0.84 (i.e. £534,040/£635,030) and incentive pay value is 2.26 (i.e. £743,170/329,070). This results show that there is great variation in

executive compensation, especially in the value of incentive pay component. Because of this skewness in the distribution, the measures of executive pay are in the natural logarithm forms.

Table 5-3 also indicates that the company's cost of granting compensation is much higher than the actual value to the executive-recipients. The average incentive pay value is £329,070 compared to its cost of £574,440 to company; while the average total pay value is £952,680 in comparison to its cost of £1,209,470 to company. Summary statistics on the ratio of pay value to cost of pay suggest that the value of incentive pay to executive is about 65.4% of its cost to company, while the value/cost ratio of total pay is higher at 87.5%[13]. In term of incentive pay, the value of options is about 80% of its cost to company, while the value of LTIPs is about 54% of its cost to company. The difference between value of options and LTIPs is due to the fact that the cost of options has already been estimated using Black-Scholes formula and its value is only accounting for the performance conditions attached to the option plan; whilst the cost of LTIPs is the maximum cost of shares granted at the grant date. The ratio of LTIPs' value to executive over their cost to company (54%) is much higher than the simple estimation made by Conyon and Murphy (2000) and Conyon et al (2001) that the value of LTIPs is only about 20% of their face value.

The ratio of long-term incentive pay over total executive pay is average 22.5% in value to executive and 32.4% in cost to company. In comparison with Conyon and Murphy's (2000) survey on CEO total compensation in fiscal year 1997, where long-term incentive pay accounted for 19% of total executive pay, this result shows a slightly change in the composition of compensation package for executive directors. Hence, although companies

[13] Note that mean percentage of pay value over cost of pay cannot be calculated simply by dividing the mean of pay value to the mean of cost pay to calculate the percentage. The nature of distribution is such that, in effect, the ratio of pay value over cost pay for each executive in the sample has to be calculated and then summed to find the mean ratio for the sample. This figure will not necessarily be same as simply using the sample means as the basis of the calculation.

are granting higher proportion of incentive pay to align executives' interests with those of shareholders; the composition of compensation package does not really change from the executives' perspective.

Table 5-4: Executive remuneration by year (Not adjusted for Inflation)

	2001	*2002*	*2003*	*2004*	*2005*	*Change*
Salary (£'000)	320.86	338.98	358.39	378.98	408.72	27%
	198.25	*184.69*	*190.98*	*187.54*	*196.38*	
Bonus (£'000)	202.55	176.20	213.86	262.67	288.96	43%
	497.09	*260.21*	*283.35*	*311.65*	*324.85*	
Cash Pay (£'000)	556.36	542.31	610.20	681.22	749.22	35%
	650.45	*410.31*	*460.18*	*496.11*	*506.47*	
Cost of Options (£'000)	307.41	275.18	232.93	162.04	135.70	-56%
	1,087.78	*897.31*	*555.84*	*354.60*	*263.99*	
Cost of LTIPs (£'000)	230.79	215.44	250.78	444.29	456.68	98%
	553.15	*386.46*	*376.16*	*1,639.13*	*733.24*	
Cost of Incentives (£'000)	538.20	490.62	483.71	606.33	592.38	10%
	1,502.38	*1,083.16*	*857.11*	*1,713.22*	*817.55*	
Total Pay at Cost	1,094.56	1,032.93	1,093.91	1,287.55	1,341.61	23%
	2,066.76	*1,396.48*	*1,211.93*	*2,014.26*	*1,226.96*	
%Incentive-Cost/Total Pay at Cost (*)	30.1%	30.3%	32.7%	33.6%	35.6%	18%
	24.2%	*23.3%*	*22.2%*	*21.9%*	*20.0%*	
Options Value (£'000)	182.72	179.94	200.44	149.72	108.95	-40%
	587.42	*595.05*	*546.85*	*342.06*	*250.01*	
LTIPs Value (£'000)	137.70	133.97	130.35	221.08	200.13	45%
	502.87	*278.79*	*257.70*	*600.20*	*309.40*	
Incentives Value (£'000)	320.42	313.91	330.78	370.80	309.08	-4%
	951.92	*734.45*	*738.42*	*726.66*	*421.03*	
Total Pay Value (£'000)	876.78	856.22	940.98	1,052.02	1,058.31	21%
	1,537.29	*1,063.29*	*1,097.84*	*1,128.37*	*822.91*	
%Incentives Value/Total Pay Value (*)	20.1%	22.0%	22.1%	25.2%	23.7%	18%
	20.5%	*21.7%*	*21.2%*	*19.7%*	*18.9%*	
Value/Cost of options	83.1%	75.9%	80.3%	87.5%	70.9%	
Value/Cost of LTIPs	48.9%	59.4%	46.9%	57.6%	57.0%	
Value/Cost of Incentives	65.7%	65.8%	63.7%	69.8%	61.9%	
Value/Cost of Total Pay	87.6%	88.9%	86.9%	88.6%	85.3%	
Observations	249	229	232	223	204	

(Note: Standard deviation in the italic)

Table 5-4 provides further information on the remuneration package of executive directors by years from 2001 to 2005. Total pay value to executives has increased 21% in five years from 2001 to 2005, while the cost of pay to company has also been up by 23%. This percentage change is in line with the increase in salary, which is at 27% in five years. While annual bonuses increase at double rate (43% in five years), the value of long-term incentive pay is slightly lower in 2005 comparing to that in 2001. From this result, it is likely that the proportion of long-term incentives in total pay will decrease. However, the ratio of long-term incentives over total pay is in the upward trend with 18% in five years for both cost of incentives and incentives' value. This is due to the fact that the variation of executive pay has decreased dramatically. Specifically, the coefficient of variation of total pay value drop from 1.75 in 2001 to 0.78 in 2005; while the coefficient of variation of cash pay and incentive pay value are from 1.17 to 0.67 and from 2.97 to 1.36, respectively. This indicates that there is a big improvement in variation of executive pay between the sampled companies from 2001 to 2005.

Also worthy of noting from Table 5-4 is the growth of LTIPs and the decline of options as the choice to grant long-term incentives to executive directors of the sample companies between 2001 and 2005. The amount of LTIPs granted by companies has nearly doubled between 2005 and 2001; while executives received 45% more of LTIPs in 2005 compared to 2001. On the other hand, the value of options has declined 40% in five-year time and the cost of options was down 56%. The result suggests that companies are following recommendations made by the Cadbury Committee and the Greenbury Committee to apply more 'challenge performance conditions' in granting incentives to executive directors. This illustrates the effect of recent governance reforms in changing companies' remuneration process, which tie executive remuneration more closely with performance of the firm. Although there is a significant change in growth of LTIPs and decline of options, total incentives are unchanged (controlled for inflation in Table 5-5) suggesting that LTIPs are substitutes, rather than complements, to share options as incentives to executives.

By controlling for inflation, Table 5-5 presents the real-term compensation for executives of sample companies in 5 years from 2001 to 2005. Total pay value in real-term increases only 9% in five-year time from 2001 to 2005. The correlation matrix between pay variables are presented in Table 5-6.

Table 5-5: Executive remuneration by year (Adjusted for Inflation)

	2001	*2002*	*2003*	*2004*	*2005*	*Change*
Salary (£'000)	320.86	333.40	342.58	351.78	368.91	15%
	198.25	*181.66*	*182.55*	*174.08*	*177.25*	
Bonus (£'000)	202.55	173.30	204.43	243.82	260.82	29%
	497.09	*255.93*	*270.85*	*289.28*	*293.21*	
Cash Pay (£'000)	556.36	533.38	583.28	632.33	676.25	22%
	650.45	*403.56*	*439.87*	*460.50*	*457.14*	
Cost of Options (£'000)	307.41	270.65	222.65	150.41	122.48	-60%
	1,087.78	*882.54*	*531.32*	*329.14*	*238.28*	
Cost of LTIPs (£'000)	230.79	211.89	239.72	412.40	412.20	79%
	553.15	*380.10*	*359.57*	*1,521.48*	*661.83*	
Cost of Incentives (£'000)	538.20	482.55	462.37	562.81	534.69	-1%
	1,502.38	*1,065.33*	*819.29*	*1,590.26*	*737.92*	
Total Pay at Cost	1,094.56	1,015.93	1,045.64	1,195.14	1,210.94	11%
	2,066.76	*1,373.50*	*1,158.45*	*1,869.69*	*1,107.46*	
%Incentive-Cost/Total Pay at Cost(*)	30.1%	30.3%	32.7%	33.6%	35.6%	18%
Options Value (£'000)	182.72	176.98	191.59	138.98	98.34	-46%
	587.42	*585.25*	*522.72*	*317.51*	*225.66*	
LTIPs Value (£'000)	137.70	131.77	124.59	205.21	180.64	31%
	502.87	*274.20*	*246.33*	*557.13*	*279.27*	
Incentives Value (£'000)	320.42	308.75	316.19	344.18	278.98	-13%
	951.92	*722.36*	*705.84*	*674.51*	*380.02*	
Total Pay Value (£'000)	876.78	842.13	899.46	976.51	955.23	9%
	1,537.29	*1,045.78*	*1,049.39*	*1,047.38*	*742.76*	
%Incentives Value/Total Pay Value (*)	20.1%	22.0%	22.1%	25.2%	23.7%	18%
	20.5%	*21.7%*	*21.2%*	*19.7%*	*18.9%*	
Observations	249	229	232	223	204	

(Note: Standard deviation in the italic)

Table 5-6: Correlation Matrix between Compensation Variables

	LnCash	LnInct	Lnctpay	LnInctv	Lntpayv	PctInctc	PctInctv
LnCash	1.0000						
LnInct	0.6527	1.0000					
	(0.0000)						
Lnctpay	0.8878	0.9110	1.0000				
	(0.0000)	(0.0000)					
LnInctv	0.6530	0.9064	0.8575	1.0000			
	(0.0000)	(0.0000)	(0.0000)				
Lntpayv	0.9175	0.7971	0.9546	0.8821	1.0000		
	(0.0000)	(0.0000)	(0.0000)	(0.0000)			
PctInctc	0.2424	0.8251	0.6456	0.7187	0.5069	1.0000	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)		
PctInctv	0.2282	0.5404	0.5298	0.8169	0.5872	0.7579	1.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	

Notes: p-value in parentheses

5.4.2 Analysis of governance variables and firm performance

Table 5-7 reports the summary statistics of governance variables and performance variables. The average shareholder return of the sampled companies is 14.1% per year. Although this return is lower than that reported by Buck et al (2003) at 21.9% for the accounting year 1997; it is higher than the average market return for the period 2001-2005, which is about 10% per year. The average share ownership of an executive director is 0.72% total ordinary shares of the company. With the average of 4.75 members in the executive team, the shareholdings of the executive team reach a significant level of 3.4% total shares and executive team becomes a substantial shareholder. Average tenure of executive director is 5.22 years. The board of directors is average of 10.87 members with 56.3% are non-executive directors. The number of board member is lower than Conyon and Peck's (1998) study, which reported average board member of 12.52 for 94 FTSE-100 companies from

1991 to 1994. Recent study by Brammer et al (2007), however, reported the size of the board is only 8.8 members for 543 companies listed on the FTSE All-Share Index in 2002. The difference might come from different data set where FTSE-100 companies tend to have bigger board than FTSE 350's and FTSE All-Share's ones. In term of the proportion of non-executive directors on the board, the data are consistent with Brammer's et al (2007) study, which reported 55% of non-executive directors in the board in 2002. This proportion, however, is higher than 47% board members being non-executives reported by Conyon and Peck's (1998) research. This result suggests an improvement in boardroom governance with majority of the board are non-executive directors, which is consistent with recommendations advanced by advocates for corporate governance reform, such as the Cardbury (1992) and the Greenbury (1995) Committees.

Table 5-7: Summary statistics of performance variables and governance variables

Variables	*Mean*	*Median*	*SD*	*Min*	*Max*
Shareholder Return (%)	14.1%	14.7%	38.4%	-86.6%	186.3%
Tobin's Q	2.26	1.70	2.58	0.60	26.90
ROCE (%)	1.0%	18.4%	156.6%	-1089%	674.7%
EPS (p)	21.01	15.2	43.57	-280.4	210.8
Executive Ownership (%)	0.72%	0.01%	4.98%	0.00%	59.48%
Age (years)	51.68	52	7.18	31.00	75.00
Tenure (years)	5.22	4	4.54	1.00	32.00
Board Size	10.87	11	2.59	5.00	18.00
LnBsize	2.36	2.39	0.24	1.61	2.89
NEDs (%)	56.3%	55.6%	10.7%	30.0%	86.7%
Institutional Ownership	25.9%	21.3%	18.9%	0.0%	92.4%
Market Value (£'million)	8,593	1,775	23,000	71	128,000
LnMV	21.50	21.29	1.41	18.07	25.57

Table 5-8 Correlation Matrix of Compensation, Governance & Performance

	TSR	TbQ	Roce	EPS	Eown	Tenu	Age	LnBZ	NEDs	Inst	Lnmv
LnCash	0.052	-0.090	0.026	0.108	0.012	-0.025	0.145	0.322	0.319	-0.071	0.605
	0.078	*0.002*	*0.380*	*0.000*	*0.698*	*0.398*	*0.000*	*0.000*	*0.000*	*0.018*	*0.000*
LnInct	-0.026	0.029	-0.019	-0.211	-0.007	0.024	0.108	0.350	0.362	-0.087	0.645
	0.432	*0.386*	*0.564*	*0.000*	*0.825*	*0.463*	*0.001*	*0.000*	*0.000*	*0.009*	*0.000*
LnTpayc	0.032	-0.101	0.048	-0.014	-0.020	-0.057	0.043	0.377	0.323	-0.081	0.640
	0.277	*0.001*	*0.106*	*0.631*	*0.501*	*0.053*	*0.146*	*0.000*	*0.000*	*0.006*	*0.000*
LnInctv	-0.018	0.076	-0.033	-0.220	-0.015	0.010	0.059	0.298	0.381	-0.091	0.623
	0.617	*0.033*	*0.364*	*0.000*	*0.679*	*0.772*	*0.102*	*0.000*	*0.000*	*0.011*	*0.000*
LnTpayv	0.051	-0.067	0.034	0.018	-0.013	-0.046	0.056	0.353	0.310	-0.044	0.618
	0.085	*0.025*	*0.251*	*0.536*	*0.666*	*0.124*	*0.061*	*0.000*	*0.000*	*0.140*	*0.000*
Payratioc	0.007	-0.091	0.070	-0.160	-0.069	-0.102	-0.157	0.273	0.148	-0.057	0.347
	0.805	*0.002*	*0.018*	*0.000*	*0.021*	*0.001*	*0.000*	*0.000*	*0.000*	*0.054*	*0.000*
Payratiov	0.031	-0.002	0.040	-0.138	-0.056	-0.068	-0.155	0.216	0.107	0.041	0.286
	0.293	*0.958*	*0.174*	*0.000*	*0.058*	*0.021*	*0.000*	*0.000*	*0.000*	*0.168*	*0.000*
TSR	1.000										
TobinQ	0.025	1.000									
	0.405										
ROCE	0.158	-0.015	1.000								
	0.000	*0.612*									
EPS	0.248	-0.002	0.132	1.000							
	0.000	*0.946*	*0.000*								
Eown	-0.015	0.043	0.014	0.097	1.000						
	0.620	*0.149*	*0.638*	*0.001*							
Tenure	0.038	0.028	-0.032	0.155	0.176	1.000					
	0.196	*0.351*	*0.285*	*0.000*	*0.000*						
Age	0.064	-0.170	0.070	0.040	-0.066	0.318	1.000				
	0.031	*0.000*	*0.018*	*0.178*	*0.026*	*0.000*					
LnBz	-0.123	-0.088	0.008	0.041	0.051	-0.036	0.024	1.000			
	0.000	*0.003*	*0.793*	*0.171*	*0.087*	*0.220*	*0.426*				
NEDs	-0.020	-0.030	0.029	-0.128	-0.042	-0.132	0.007	0.093	1.000		
	0.494	*0.311*	*0.334*	*0.000*	*0.159*	*0.000*	*0.825*	*0.002*			
Inst	0.002	-0.021	0.060	-0.101	0.140	-0.011	-0.029	0.142	0.167	1.000	
	0.959	*0.484*	*0.045*	*0.001*	*0.000*	*0.701*	*0.325*	*0.000*	*0.000*		
Lnmv	-0.073	0.018	-0.017	0.039	-0.057	-0.067	0.024	0.553	0.290	-0.153	1.000
	0.013	*0.536*	*0.567*	*0.191*	*0.054*	*0.025*	*0.417*	*0.000*	*0.000*	*0.000*	

Notes: p-value in italic

5.5 Conclusion

The present chapter had two objectives. First, it presented the methodology to be adopted in assessing the determinants of executive compensation and testing the predictions of tournament theory. The research approach is a deductive approach owing to positivism philosophy. Accordingly, the panel data analysis is used to test the presented hypotheses. A static panel data analysis with the fixed effects estimation and the random effects estimation is firstly discussed. The fixed effects model assumes the intercept to change across units rather than over time, while the random effects model allows individual specific terms to be randomly distributed. A Hausman test will decide the appropriateness between employing the fixed effects model or the random effects model. In addition to the static models, Arellano-Bond GMM estimation is used to allow for the dynamic effects of panel data models by including a lagged dependent variable.

The second objective of this chapter was to introduce the sample and measurement of variables used to examine the determinants of executive pay as well as to test the tournament theory in the context of executive compensation. It is noted that from a sample of 50 UK quoted companies in 5 years from 2001 to 2005, two sets of data are constructed: (1) unbalanced data of 345 executive directors in five years 2001-2005 (1,137 observations) with details of their pay and individual variables; and (2) balanced data of 50 companies in five years 2001-2005 (250 observations) with details of performance and governance variables. In addition, this chapter also provides descriptive analyses of executive pay and other governance and performance variables. A number of interesting aspects of executive compensation have emerged from this analysis. Firstly, there is evidence of the significant growth in executive pay in comparison to prior period. Specifically, the average executive pay in the period 2001-2005 has increased 80% comparing to that in 1997 reported by Buck et al (2003) and Conyon et al (2001). Secondly, the analysis confirms the difference between the cost of granting long-term incentives to company and the value of those incentives to

executives. The value of share options is about 80% of their cost to company, while executives receive LTIPs pay at 54% of its cost to shareholders. Thirdly, during the sample years, there is a clear growth in the use of LTIPs and decline in the use of options. The cost of granting LTIPs has increased 98% while the cost of options drops 56%. Also during the sample year, the variation of pay between executive and between companies has reduced considerably with the coefficient of variation of total pay drops from 1.75 in 2001 to 0.78 in 2005. Thus, in sum, it is clear that there have been changes in the level and composition of executive compensation of UK quoted companies over the period 2001 to 2005.

This chapter has set out measurement of variables, specified empirical models, and analyzed descriptively the sample data. The next two chapters will present empirical results testing the determinants of executive pay components, structure of executive pay and tournament pay structure.

Chapter 6

EMPIRICAL RESULTS ON DETERMINATIONS OF EXECUTIVE PAY COMPONENTS AND INCENTIVE PAY RATIOS

6.0 Introduction

As discussed in previous chapters, literature on the determinants of executive compensation has produced conflicting results with very small economic significance (Jensen and Murphy, 1990; Murphy, 1999; Conyon and Murphy, 2000). The examination of the components of executive pay components and the structure of executive pay package might be more fruitful in understanding the determinants of executive pay. Agency theory and the managerial power perspective have provided theoretical frameworks to derive testable hypotheses on the determinants of executive pay components and pay strucuture (incentive pay ratio), as discussed in Chapter 4. The purpose of this chapter is to present an empirical analysis of the determinants of executive pay components and incentive pay ratio to test those hypotheses. Specifically, this chapter examines the determinants of total executive pay, determinants of cash pay components, long-term incentive pay components, and the ratio of long-term incentives to total executive pay (executive pay structure). In each pay determination model, the empirical results from OLS estimator are first presented following by an Arellano-Bond GMM estimator, which controls for the dynamic model and time varying dependent variable (see Chapter 5). The empirical model is also tested using both measures of dependent variables: the cost of executive pay to company and the value of pay to executives.

This chapter is structured as follows. Section 6.1 provides empirical evidence on the determinants of the level of executive pay components. Firstly, results relating to the

determinants of total executive compensation are presented in subsection 6.1.1. Secondly, subsection 6.1.2 discusses the empirical results relating to the determinants of cash pay (sum of salary and bonus). The empirical results testing the determinants of incentive pay components, including options and long-term incentive plans (LTIPs), is presented in subsection 6.1.3. Section 6.2 discusses the empirical results on the determinants of executive pay structure (via the ratio of long-term incentive pay to total executive compensation). Finally, section 6.3 presents a discussion and conclusions.

6.1 Determinants of the Level of Executive Pay Components

In this section, the empirical results examining the determinants of executive pay components are presented. The reader is reminded of the hypotheses on the determinants of executive pay components derived from both agency theory and the managerial power perspective in Chapter 4 as follows:

H1: *Executive pay components and executive pay structure are positively related to firm performance*

H3: *Executive pay components and pay structure are positively related to firm size*

H4a: *Executive pay components and pay structure are negatively related with executive shareholdings*

H4b: *Executive pay components and pay structure is positively related with executive shareholdings*

H5: *Executive pay components and pay structure are positively related to executive tenure and executive age*

H6: *Executive pay components and pay structure are negatively related to the level monitoring and the effectiveness of the board*

The empirical model used to test these hypotheses is constructed as follows.

$$Ln(Pay) = \alpha + \beta_1 Performance + \beta_2 Lag\text{-}Performance + \beta_9 Ln(Size) + \beta_3 ExeOwn + \beta_4 Tenure + \beta_5 Age + \beta_6 Ln(Bsize) + \beta_7 NEDs + \beta_8 InstOwn + \beta_9 CEOdum$$

Where:

- Ln(Pay): logarithm of Total Pay, Cash Pay, and Long-term Incentives
- Performance: Firm performance measured in TSR, Tobin's Q, ROCE, EPS
- Lag Performance: Firm performance of previous year (year t-1)
- Ln(Size): logarithm of firm's market valuation
- ExeOwn: Executive's share ownership
- Tunre: Tenure of executives (years in current position)
- Age: Age of executive directors
- Ln(Bsize): Logarithm of number of board members
- NEDs: Percentage of non-executive directors in total members on the board
- InstOwn: Percentage of share ownership held by institutional shareholders
- CEOdum: CEO dummy variable (equal 1 for CEO, 0 otherwise)

The model uses both an OLS estimator and Arellano-Bond GMM estimator. Due to the nature of the GMM estimator, the lagged performance variable will be dropped in Arellano-Bond regressions. In each model of the determinants of compensation, both the empirical results from OLS regression and Arellano-Bond GMM regression are shown with different performance measures and distinguishing between the cost of pay to the company and the value of pay to executives. The results of the empirical analyses are presented separately for the determinants of total executive compensation, cash compensation and long-term incentives. Details of these results are shown in the following sections.

6.1.1 Determinants of Total Executive Compensation

This section presents the empirical analysis of hypotheses regarding the determination of the level of total compensation for executive directors. To begin with, Table 6.1 presents the empirical results (using OLS estimator) examining the determinants of cost of total executive compensation to the company. As illustrated in Table 6.1, the determinants of total executive pay are tested with alternative definitions of firm performance: TSR (total shareholder return), Tobin's Q (which was defined in Chapter 5), ROCE (return on capital employed), and EPS (earning per share), respectively. Each performance model takes on OLS regressions with both fixed effects and random effects. The Hausman specification test is, then, performed to decide which regression model can be used and only the results of appropriate type of regression models are presented in Table 6.1. Specifically, the Hausman test statistics in all regressions are significant suggesting that fixed effects regressions should be used. To further examine the dynamic effect of panel data, regressions using consistent Arellano-Bond generalized method of moments (GMM) estimator are used. Details of Arellano-Bond GMM estimation and methods have been discussed in Chapter 5. The empirical results of the dynamic Arellano-Bond GMM regressions are presented in Table 6.2. As shown in Table 6.2, Sargan test statistic is insignificant in all performance equations, suggesting that the overidentifying restrictions do not present and instrumental variables are uncorrelated with a set of residuals and therefore the instruments are valid (i.e. exogenous).

Table 6-1: Determinants of Total Executive Pay – Cost to company (OLS regression)

Dependent Variable: Total Pay (Cost to Co.)	Performance Variables			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Performance	**.1320***** (3.19)	**-.0289***** (-2.72)	**.0242***** (2.82)	.0005 (1.04)
Lag Performance	**.1211***** (3.41)	-.0044 (-0.83)	**.0049***** (2.80)	**-.0015***** (-3.10)
Log of Firm's Market Valuation	**.1486***** (3.10)	**.3068***** (6.99)	**.2354***** (5.79)	**.2628***** (5.96)
Executive Ownership	.6639 (0.41)	.8764 (0.54)	.6265 (0.39)	.6392 (0.39)
Executive Tenure	**.0574***** (4.45)	**.0619***** (4.85)	**.0646***** (5.04)	**.0655***** (5.11)
Executive Age	.0054 (0.44)	.0051 (0.42)	.0102 (0.83)	.0087 (0.70)
Log of Board Size	.1211 (1.03)	-.0067 (-0.06)	.1191 (1.01)	.0569 (0.48)
NEDs	.1775 (0.77)	.1295 (0.57)	.1057 (0.46)	.0914 (0.40)
Institutional Shareholdings	-.1952 (-1.18)	-.2425 (-1.46)	-.1312 (-0.79)	-.1404 (-0.85)
CEO Dummy	**.7324***** (9.16)	**.7313***** (9.17)	**.7268***** (9.06)	**.7388***** (9.20)
Const	**9.2667***** (8.33)	**6.3021***** (6.28)	**7.1732***** (7.47)	**6.8315***** (6.73)
F test	29.26***	30.03***	28.77***	28.56***
R^2	0.2679	0.3950	0.3188	0.3441
Hausman Test	63.58***	57.87***	66.59***	61.23***
Fixed or Random	Fixed	Fixed	Fixed	Fixed
Observations (N)	1137	1137	1137	1137

****: Statistically significant at 1% level respectively*

Table 6-2: Determinants of Total Executive Pay – Cost to Company (Arellano-Bond GMM Estimator)

Dependent Variable: Total Pay (Cost to Co.)	Performance Variables			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Lag Dependent Variable	**.4676***** (4.62)	**.4413***** (4.53)	**.4462***** (4.63)	**.4330***** (4.45)
Performance	**.0850*** (1.77)	.0221 (1.03)	**.0347***** (3.74)	.0002 (0.19)
Log of Firm's Market Valuation	**.1247*** (1.72)	**.1805***** (2.64)	**.1843***** (2.87)	**.2031***** (3.00)
Executive Ownership	2.178 (0.71)	2.079 (0.69)	2.007 (0.67)	2.102 (0.69)
Executive Tenure	**.1127***** (3.77)	**.1138***** (3.84)	**.1136***** (3.90)	**.1144***** (3.87)
Executive Age	-.0298 (-0.44)	-.0310 (-0.47)	-.0293 (-0.45)	-.0311 (-0.47)
Log of Board Size	**.4003**** (2.48)	**.4046**** (2.51)	**.3792**** (2.43)	**.3831**** (2.40)
NEDs	-.3934 (-1.09)	-.4161 (-1.16)	-.3492 (-1.00)	-.4138 (-1.16)
Institutional Shareholdings	.1237 (0.48)	.0998 (0.39)	.0270 (0.11)	.1204 (0.47)
CEO Dummy	**.7440***** (6.84)	**.7419***** (6.89)	**.7187***** (6.76)	**.7423***** (6.91)
Const	-.0652 (-0.96)	-.0658 (-0.97)	-.0671 (-1.01)	-.0661 (-0.97)
Sargan Test	3.44	3.60	4.45	4.01
Arellano-Bond order 1	-5.53***	-5.47***	-5.18***	-5.39***
Arellano-Bond order 2	1.28	1.19	0.12	1.09
Observations (N)	514	514	514	514

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

As illustrated in Table 6.1, the sign and significance of the performance variables are dependent on the measure of performance used. The shareholders return (TSR) and return on capital employed (ROCE) coefficients are positive and significant (at the 1 percent level), while the absolute performance measure (EPS) is insignificant. The Tobin's Q measure of performance even shows a negative and significant coefficient, which implies a

negative relationship between executive pay and firm performance. The difference between performance measures (TSR and Tobin's Q) appears to be the nature of the two measures. Whilst Tobin's Q is an equilibrium measure that is equal to the market value of fund divided by the book value of fund; TSR reflects some adjustments overtime. Descriptive results in Chapter 5 also reflect that there is no correlation between TSR and Tobin's Q.

In Table 6.2, firm performance coefficient is positive and significant in the shareholder return model (TSR) and accounting rate of return model (ROCE), while it is insignificant in other performance models. By taking first difference, Arellano Bond GMM results indicate that change in firm performance (measured in TSR and ROCE) is positively correlated to change in executive pay. This result confirms the positive relationship between shareholder returns, ROCE and level of executive compensation found in the OLS fixed effects regressions (Table 6.1).

The economic importance of these determinants, however, is relatively low. The significant coefficient of 0.132 (for TSR) and 0.0242 (for ROCE) means that holding other variables constant, for every 10% increase in shareholder return or accounting return (ROCE), total executive pay increases only 1.32%[14] and 0.24%[15] respectively. This result is much smaller than that reported in Buck et al (2003), where the shareholder return coefficient was 1.546 suggesting 10% increase in shareholder returns resulted in a 15.5% increase in total pay. The low economic significance of the pay-performance relationship, however, is consistent with the findings of Jensen and Murphy (1990) and Conyon and Murphy (2000).

The coefficient of lagged performance also depends on the performance measure used; the coefficient is positive and significant for shareholder return (TSR) and accounting

[14] $\Delta Pay = e^{0.132} - 1 = 0.141$
[15] $\Delta Pay = e^{0.0242} - 1 = 0.025$

ratio performance (ROCE) models. The market-based measure of performance (Tobin's Q) and the absolute accounting-based measure of performance (EPS) have negative coefficients with only the EPs coefficient being significant. Again, the pay-performance relationship is sensitive to performance measures. The empirical results presented in Table 6.2 also imply that prior year pay levels strongly determine the current year executive pay levels. The average coefficient on the lagged performance variable is 0.44. In economic terms, this implies that prior-year compensation explains about 44% of the variation in the current-year pay of executive directors. In sum, both current year and prior year shareholder return (TSR) and accounting return (ROCE) are determinants of the level of executive compensation. This finding supports hypothesis H1 and the notion of agency theory for the positive relationship between level of executive pay and firm performance.

In all performance equations, firm size (measured by the log of market value of the firm), executive tenure and CEO dummy are the explanatory variables that are significantly associated with the level of total compensation for executive directors. The coefficient of firm size is positive and significant in all performance models. The finding, hence, supports hypothesis H3 for a positive relationship between pay components level and firm size. The coefficient of firm size measures the elasticity of executive compensation with respect to firm size, that is, the percentage change in executive pay for a given percentage change in firm size. In the shareholder return (TSR) performance equation, for example, the size coefficient is significant at 0.1486 meaning that a 10% change in the market value of the firm, *ceteris paribus*, yields an increase of 1.5% in total executive pay. This result is consistent with the study of Buck et al (2003) who report the log of sales coefficient at 0.137 in log of total pay model. The size coefficient is higher in other regressions (Tobin's Q, ROCE and EPS) at 0.3068, 0.2354 and 0.2628 respectively suggesting the size elasticity of executive pay is approximately from 0.24 to 0.31. The result is consistent with prior findings (Ciscel and Carroll, 1980; Cosh and Hughes, 1997; Lewellen and Huntsman, 1970; McGuire, et al., 1962) for significant pay determination of firm size.

In addition to OLS regression results, Arellano-Bond GMM regression results in Table 6.2 also suggest a positive and significant relationship between level of executive pay and firm size. This indicates that executives earn more money when firm gets bigger. An average coefficient of 0.18 suggests that 10% increase in firm size yields executives 1.8% increase in total pay not for any incremental contributions.

Executive tenure is also positive and significant in all performance equations. The coefficient of executive tenure in all models is around 0.06 (as in Table 6.1), which means that for every one extra year in tenure, executive pay is approximately 6% higher, holding other variables constant. Arellano-Bond regression results as presented in Table 6.2 suggest a positive and significant relationship between executive pay and tenure in the job, with coefficient of around 11%. Hence, total executive pay is higher when executives stay longer in his position. This result supports hypothesis H5, which suggests a positive correlation between level of executive pay and executive tenure.

Table 6.1 also shows a consistently positive and significant coefficient for the CEO dummy variable in all performance models. With the significant value of 0.73 in all four models, the coefficient implies that when an executive becomes chief executive officer (CEO), his/her total compensation increases by 73%[16]. This big difference in compensation for the CEO and other executives hints that the position in the organizational hierarchy might outweigh the importance of marginal performance as a main determinant of executive pay, as suggested by tournament theory. Detailed tests of tournament theory will be presented in Chapter 7.

[16] dLnPay/dCEOdummy = 0.73 then ΔPay/Pay = 0.73 Δ(CEOdummy)
If Δ(CEOdummy) = 1 or executive becomes CEO, ΔPay/Pay = 0.73 or 73%

An interesting result from Table 6.2 is the positive and significant coefficient of board size (logarithm of number of board members). The positive and significant coefficient is in all performance models consistently at around 0.40, which means that a 10% increase in board size results in an increase of 4% in total compensation for executives. With an average board size of 10.87 in the sample companies, an additional member to the board of directors yields an increase of roughly 4% in executive pay. This result supports hypothesis H6 for a positive relationship between executive pay and board size. It indicates that larger board tends to be less effective in monitoring management, which is consistent with the managerial power perspective.

With regard to the effect of other individual contingencies, the executive share ownership and executive age variables are not significant in any of the regressions. The insignificant result of the coefficient of executive shareholding variable neither supports agency theory (for a negative relationship with executive pay) nor the managerial power theory (for a positive relationship with executive pay). Also, the monitoring function of the board of directors, which is measured by board size and the percentage of non-executive directors, has no significant association with all four performance measures. The institutional shareholdings coefficient indicates a negative effect on executive pay, which is supported by both agency theory and the managerial power theory. However this coefficient is not statistically significant in all four performance regressions, which means that there is not enough evidence for a negative relationship between institutional shareholdings and executive pay, at least in these four models.

Overall, the results of this analysis indicate that firm size, executive tenure and holding a CEO position are important determinants of executive compensation. Firm performance (both current year performance and prior year performance) measured in both shareholder return (TSR) and accounting return (ROCE) is positively and significantly correlated with level of executive compensation. The economic significance of this

relationship, however, is also relatively low. Other individual and governance variables (executive shareholding, age, size of board of directors, balance of non-executive directors and institutional shareholding) are not significantly associated with the level of executive compensation, at least in these models using the cost of compensation to company as the dependent variable. The overall fit of the models range from a minimum of 0.2679 in TSR model to maximum of 0.3950 in Tobin's Q model, which means that the models explain about 27% to 40% of the variance in total executive compensation.

The results presented in Table 6.1 and 6.2 above use the cost-to-company level of executive pay as the dependent variable. According to the argument described in Chapter 4 (Hypothesis H2), the use of cost of pay to the company and the value of pay to executive may affect differently the pay-performance relationship. To examine the differential effects of using the cost of pay to the company and the value of pay to the executive as dependent variable, Tables 6.3 presents the empirical results of OLS regressions using executive's value of pay as the dependent variable. Arellano-Bond GMM regression on total executive pay value faces over-identifying restriction and hence is not valid (refer to Appendix 3 for details).

According to the results presented in Table 6.3, the main determinants of executive pay value are; firm size, executive tenure, being a CEO and firm performance (for shareholder return and ROCE performance models only), which is consistent with the results using the cost of pay dependent variable as presented in Table 6.1. A comparison of the OLS regression results between cost model (Table 6.1) and value model (Table 6.3) is presented in Table 6.4. According to the results presented in Table 6.4, there is no statistically significant difference between the determination of cost and value of executive pay, except for executive ownership variable.

Table 6-3: Determinants of Total Executive Pay – Value to executives (OLS Regression)

Dependent Variable: Total Pay (Value to Exes)	Performance Variables			
	TSR	TobinQ	ROCE	EPS
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Performance	**.2208***** (5.79)	**-.0175*** (-1.74)	**.0191**** (2.35)	.0008 (1.59)
Lag Performance	**.1957***** (5.98)	-.0081 (-1.62)	**.0047***** (2.79)	**-.0011**** (-2.46)
Log of Firm's Market Valuation	-.0278 (-0.63)	**.1749***** (4.23)	**.1234***** (3.22)	**.1320***** (3.18)
Executive Ownership	-2.064 (-1.38)	-1.8855 (-1.24)	-2.101 (-1.37)	-2.109 (-1.38)
Executive Tenure	**.0493***** (4.15)	**.0578***** (4.81)	**.0608***** (5.05)	**.0611***** (5.06)
Executive Age	.0083 (0.73)	.0114 (0.99)	.01576 (1.36)	.0140 (1.21)
Log of Board Size	.0400 (0.37)	-.1039 (-0.93)	.0175 (0.16)	-.0281 (-0.25)
NEDs	.2627 (1.24)	.1275 (0.59)	.1219 (0.56)	.1291 (0.59)
Institutional Shareholdings	**-.2671*** (-1.76)	**-.2978*** (-1.90)	-.1776 (-1.14)	-.1994 (-1.28)
CEO Dummy	**.6432***** (8.72)	**.6463***** (8.60)	**.6411***** (8.48)	**.6490***** (8.57)
Const	**12.973***** (12.64)	**8.9401***** (9.45)	**9.435***** (10.43)	**9.453***** (9.87)
F test	28.68***	24.88***	23.86***	23.47***
R^2	.0484	.2623	0.1912	0.2032
Hausman Test	119.61***	70.46***	73.83***	72.81***
Fixed or Random	Fixed	Fixed	Fixed	Fixed
Observations (N)	1137	1137	1137	1137

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

Table 6-4: Comparison results between cost models and value models

Variables	TSR (z-value)	TobinQ (z-value)	ROCE (z-value)	EPS (z-value)
Performance	-0.013	-0.004	0.001	0.000
Lag Performance	-0.011	0.002	0.000	0.000
Log of Firm's MV	0.056	0.016	0.017	0.019
Executive Ownership	1.895*	2.042**	1.915*	1.916*
Executive Tenure	0.001	0.001	0.001	0.001
Executive Age	-0.003	-0.006	-0.003	-0.004
Log of Board Size	0.074	0.104	0.099	0.157
NEDs	-0.058	0.002	-0.022	-0.053
Institutional Shareholdings	0.034	0.023	0.033	0.038
CEO Dummy	0.007	0.007	0.007	0.007

*, **: *Statistically significant at 10%, 5% level respectively*

As presented in Table 6.3, the coefficient of firm size (log of market valuation) is positive and significant in all performance models except for shareholder return (TSR) regression. This result, together with the result in Table 6.1, suggests that firm size determines both the cost of pay to the company and the value of pay to the executive director. The degree of determination, however, is different between the cost and value of compensation. The coefficient on the firm size variable using Tobin's Q, ROCE and EPS models are 0.1749, 0.1234, and 0.1320 respectively for the value of pay to the executive measure (Table 6.3), which are lower than those of cost pay measure (Table 6.1) and are 0.3068, 0.2354, and 0.2628 respectively. This result implies that while firm size is strongly correlated with the cost of executive pay to company, it is less influential in determining the value of that compensation package to executive directors. The Z-value of the firm size coefficient, however, is not statistically significant suggesting that there's not enough

evidence that firm size has different effect on executive pay at cost to company and in value to executives.

The relationship between firm performance and the value of executive compensation, being consistent with the cost-pay models, is dependent on performance measures. The firm performance coefficient is positive and significant in the shareholder return (TSR) and accounting rate of return (ROCE) models. The shareholder returns significant coefficient of 0.2208 suggests that an increase of 10% in shareholder return yields an increase of 2.21% in total executive pay. This coefficient is nearly double the shareholder return coefficient in the cost-pay model suggesting that shareholder return is more strongly related to the value of executive pay than it is with the cost of pay to the company. However, Z-value is less than 1.65 and hence there is not significant difference between the two models (cost pay and pay value). Although the result again supports a positive and significant relationship between executive pay and firm performance, the economic significance of the relationship is quite low. With an annual increase of 14.1% in shareholder return for the sample firms (see Table 5-7 in Chapter 5 for details), the level of executive pay value increases by only 3.12%[17] (1.86% for cost of pay). The coefficient of the accounting rate of return (ROCE) is even smaller (0.0191 or 0.19% change in pay value for every 10% change in ROCE) and further confirms the economic insignificance of the pay-performance relationship. Lagged performance also has a positive and significant coefficient in shareholder return (TSR) model and accounting return ROCE model, but is negative in Tobin's Q and EPS models.

Consistent with the cost-pay results presented in Table 6.1, the executive tenure coefficient is positive and significant in all four performance models. The result implies a positive relationship between executives' pay value and their tenure on the job, i.e. the longer executives stays in their position, the higher the value of the compensation to be received by the executive. The tenure coefficient of 0.05 to 0.06 means that an extra year in

[17] 2.21% x 14.1/10 = 3.12% (1.32% x 14.1/10 = 1.86%)

tenure yields approximately 5% to 6% higher compensation for the executive. This result is not different from the cost-pay model and again supports hypothesis H5 for a positive relationship between executive pay and tenure. Furthermore, the CEO dummy coefficient is positive and significant in all performance regressions, consistent with the results in the cost-pay model, suggesting that there is significant difference between CEO's pay and other executives' pay. The coefficient, however, is slightly lower at 0.64 compared to the cost-pay model (0.73 as presented in Table 6.1). A significant coefficient of 0.64 in all performance models means that when an executive director becomes a CEO (change in the value of the dummy variable from zero to one), his/her net compensation value increases by 64% (compared to the nominal value increase of 73% in the cost-pay model).

Another result from Table 6.3 is the negative and significant (at 10% level) coefficient of institutional shareholdings (for market-based performance: TSR and TobinQ models), which is not present in the cost-pay models. The result suggests that institutional shareholders did play some role in determining the value of pay received by executive directors. In other words, the greater the concentration of institutional share ownership, the lower the value of compensation to executives. The significant coefficient, however, is only present in market-based performance models (TSR, TobinQ), while it is insignificant in accounting-based performance (ROCE, EPS) models. This result implies that institutional shareholders, whilst did not show an influential role in granting executive pay (i.e. the cost of granting compensation to company), they did play an active role in determining the value of executive pay. Specifically, the value of executive pay is lower and more closely related to market-based firm performance than accounting-based firm performance when the share ownership by institutional shareholders is higher.

With regard to the effect of other individual and governance variables on level of executive pay, the variables executive share ownership, executive age, size of the board and proportion of non-executive directors are not significant in any of the regressions. This result, again, shows that there is not enough evidence for a contribution of these variables in determining the compensation for executive directors.

A summary note for the determinants of total level of executive pay is that firm performance (depending on the performance measure used) did show a positive and significant relationship with the level of compensation, both in term of the cost of pay to company and the value of pay to executives. The economic significance of the relationship, however, is quite low, which is consistent with the findings of Jensen & Murphy (1990) and Conyon & Murphy (2000). As discussed, firm size is a significant determinant of executive pay with the size elasticity of pay ranging from 0.15 to 0.31. The other consistent determinants of executive pay level are executive tenure and being in a CEO position. The longer executives stay in their position, the more compensation they receive. For one additional year in the position, the executive is paid approximately 6% more. Moreover, when an executive becomes a CEO, his/her compensation is 73% higher in the cost of pay (to the company) and 64% higher in net value to the executive. When controlling for the time variation by first difference, board size is positively and significantly correlated with the current compensation level (both in cost-pay and pay-value models). The other board monitoring proxy, proportion of non-executive directors on the board, however, shows no consistent sign and is not significantly related to total executive pay. Also, there is no evidence of a difference between cost model and value model of determining total executive pay. These findings fail to support hypothesis H2 for a different effect of using cost pay and pay value as dependent variables.

6.1.2 Determinants of Cash Compensation

This section presents the empirical results of the determinants of cash compensation (sum of salary, bonuses and other short-term benefits). The results are presented in Table 6.5 using OLS estimator. As Table 6.5 indicates, the relationship between cash compensation and firm performance is dependent on the performance measures. The coefficient is positive and significant with shareholder return (TSR) and absolute accounting return (EPS), while it is negative and insignificant with Tobin's Q ratio (TobinQ) and accounting rate of return (ROCE). The significance of the relationship, consistent with the total pay determinants result, is very low. Shareholder return coefficient of 0.1242 means that for every 10% increase in shareholder return, holding other variables constant, the level of cash compensation for executive directors increases by only 1.24%. The EPS coefficient is even smaller at 0.0010, which means that ten pence increase in EPS yields a 1% increase in cash compensation, controlling for cash compensation variable being in logarithm and ceteris paribus. Lagged firm performance is only positively and significantly associated with executive cash compensation in shareholder return (TSR) model, whilst the coefficient is negative and insignificant in all other performance models. In contrast, the relationship between firm size and cash compensation is positive and significant in all performance models except for shareholder return (TSR) model.

With regard to executive's individual contingencies, two out of three proxies show a significant relationship with level of cash compensation. While executive tenure is still a positive and significant determinant of cash pay as found in total pay models, the significant and positive relationship between executive age and executive compensation is only, so far, found in cash pay models. This result supports hypothesis H5, derived from both agency theory and the managerial power perspective, which argues for a positive relationship between executive tenure, age and executive compensation. The other executive's individual

proxy, executive shareholding, has a positive coefficient and statistically insignificant in all performance models. Hence there is no evidence that the level of executive compensation is affected by the level (percentage) of executive share ownership.

Table 6-5: Determinants of Cash Compensation

(OLS Regression)

Variables	Performance Variables			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Performance	**.1242***** (4.62)	-.0018 (-0.26)	-.0032 (-0.55)	**.0010***** (2.79)
Lag Performance	**.1468***** (6.36)	-.0011 (-0.32)	-.0012 (-0.98)	-.0004 (-1.47)
Log of Firm's Market Valuation	.0215 (0.69)	**.1281***** (4.35)	**.1250***** (4.62)	**.1015***** (3.47)
Executive Ownership	.4425 (0.42)	.4855 (0.45)	.4698 (0.43)	.4100 (0.38)
Executive Tenure	**.0380***** (4.54)	**.0448***** (5.24)	**.0449***** (5.27)	**.0449***** (5.29)
Executive Age	**.0266***** (3.33)	**.0308***** (3.75)	**.0309***** (3.78)	**.0303***** (3.71)
Log of Board Size	.0170 (0.22)	-.0217 (-0.27)	-.0199 (-0.25)	.0004 (0.01)
NEDs	**.3003**** (2.00)	.2022 (1.32)	.1956 (1.28)	.2439 (1.59)
Institutional Shareholdings	**-.1824*** (-1.70)	-.1664 (-1.49)	-.1648 (-1.49)	-.1595 (-1.46)
CEO Dummy	**.5239***** (10.07)	**.5263***** (9.85)	**.5276***** (9.87)	**.5243***** (9.86)
Const	**10.761***** (14.87)	**8.402***** (12.49)	**8.451***** (13.21)	**8.906***** (13.23)
F test	47.55***	40.96***	41.03***	42.10***
R^2	0.1354	0.2489	0.2428	.2234
Hausman Test	81.54***	88.89***	103.91***	113.46***
Fixed or Random	Fixed	Fixed	Fixed	Fixed
Observations (N)	1137	1137	1137	1137

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

The group variables represented the monitoring function of the board of directors do not show a significant relationship with the level of cash compensation, except for the shareholder return (TSR) performance model. For the shareholder return (TSR) regression, there is evidence of a positive relationship between executive's cash compensation and the percentage of non-executive directors in the board; and a negative relationship between cash compensation and ownership concentration by institutional shareholders. The positive and significant between the percentage of non-executive directors and cash compensation supports the managerial power theory that non-executive directors does not monitor executives effectively to lower their compensation (as suggested by agency theory). The role of institutional shareholders, however, helps to increase the monitoring function with a negative relationship between percentage of institutional shareholdings and executive cash compensation. Board size coefficient is not statistically significant in any of performance equations, which means that there is no evidence of a relationship between board size and executive cash compensation.

Consistently with total pay determination models, cash compensation for the CEO position is significantly higher than that for other executive positions. The coefficient for CEO dummy variable is positive and significant in all performance models. However, the differentiation between CEO and other executives is smaller in cash compensation than in total compensation. CEO coefficient of 0.52 means that when executive director becomes CEO, his cash compensation (salary and bonus) is increased by 52% in comparison to an increase of 73% in total cost pay or 62% in total pay value.

Overall, the results of the determinants of executives' cash compensation suggest that shareholder return (TSR) has a significant effect on determining executive cash compensation, while other performance measures does not have an effect except for the EPS model with very low coefficient. Firm size is also a significant determinant of cash compensation for executive directors. The firm size coefficient is positive and significant in

all performance regressions except shareholder return model. Executive's individual contingencies measured in executive tenure and age have significant and positive correlation with the level of cash compensation, supporting both agency theory and the managerial power perspective. There is also a negative relationship between institutional shareholdings and cash compensation, suggesting the role of institutional shareholders in monitoring function. However, this relationship is only significant at 10% level in shareholder return models, while it is insignificant in all other performance regressions.

6.1.3 Determinants of Long-term Incentive Pay

Having examined the determinants of both total executive compensation and cash compensation, the analysis moves on to examine the determinants of long-term incentive compensation elements. With the same structure as in previous analyses, this section presents the empirical results on the determinants of long-term incentive pay with both OLS estimator and Arellano-Bond dynamic GMM estimator, differentiating the cost of long-term incentives to company and their value to executive directors. Details of these results are presented in the following Table 6.6 to Table 6.9.

Table 6.6 presents the results of the analysis to determine the level of long-term incentive pay granted by the host company. Once again, firm size is the primary determinant of the long-term incentive pay, with the log of firm valuation being positively related to the log of incentive pay. Moreover, the log of firm valuation is significant in all four performance regressions. In economic terms, the coefficient on firm size, in shareholder return (TSR) model for example, is 0.3975 meaning that a 1% increase in firm's market valuation yields an increase of 3.98% in executive's long-term incentive pay. This is also known as the size elasticity of long-term incentive pay. Unlike in total pay and cash pay models, the relationship between the cost of incentive pay to executive and firm performance

is inconsistent among performance measures. While there is still a positive and significant relationship between incentive pay and accounting rate of return (ROCE), other performance measures is negatively and insignificantly related to executive's incentive pay except for Tobin's Q measure. Moreover, the relationship between executive's incentive pay and lagged firm performance also has conflict results between performance measures. Again lagged ROCE coefficient is positive and significant, while TSR and EPS have negative and significant coefficient, TobinQ coefficient is positive but insignificant. This result suggests that except for accounting rate of return (ROCE), firm performance does not have a significant effect on the level of long-term incentive pay granted to executives.

Table 6.6 also indicates the significant role of executive's individual contingencies measured by executive tenure and age in shaping the level of long-term incentive pay. Both tenure and executive age have positive and significant coefficients in all performance equations. The result implies that with the more years spending on the position and the older age, executive director tends to be paid higher level of long-term incentive pay. This supports the agency theory's argument that by the time (older and long tenure) executive becomes healthier and more risk-neutral to accept the riskier compensation in term of long-term incentive pay for an expecting higher return. Executive shareholding, the other individual contingency, does not have a significant effect on the level of incentive pay.

Among variables representing the monitoring function, the proportion of non-executive directors in the board is the only variable to exhibit any significance in the four regressions. A positive and significant coefficient on the proportion of non-executive directors in the board variable implies that the presence and dominance of non-executive directors in the board do not help to reduce the level of incentives paid to executives. This is conflicting to the result found earlier for a negative relationship between the proportion of non-executive directors and level of cash compensation for executives. It, however, suggests that the presence of non-executive directors helps to influence the compensation package for

executive directors in the way (lower cash pay component and increase performance-based pay component) to protect shareholders' interests. This result hence does not follow agency argument for a direct monitoring function of non-executive director (i.e. increase monitoring to reduce the use of incentive contract). Rather, it is likely that non-executive directors use an indirect way, through influencing components of compensation package, to align the interests of executives with those of shareholders. However, as presented in Section 6.1.1, the dominance of non-executive directors does not have a significant effect on the level of total compensation for executives.

Table 6-6: Determinants of Incentive Pay – Cost to company

(OLS regression)

Dependent Variable: Incentive Pay (Cost to Co.)	Performance Variables			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Performance	-.0864 (-1.15)	**-0.441*** (-1.89)	**.0661***** (2.73)	-.0007 (-0.75)
Lag Performance	**-.1503**** (-2.30)	.0065 (0.61)	**.0157***** (3.57)	**-.0015*** (-1.87)
Log of Firm's Market Valuation	**.3975***** (4.73)	**.3649***** (4.80)	**.3092***** (4.39)	**.3828***** (4.93)
Executive Ownership	.8025 (0.18)	.5625 (0.13)	.4147 (0.10)	1.001 (0.23)
Executive Tenure	**.0705***** (3.09)	**.0644***** (2.84)	**.0662***** (2.94)	**.0661***** (2.92)
Executive Age	**.0387*** (1.86)	**.0349*** (1.67)	**.0387*** (1.87)	**.0358*** (1.72)
Log of Board Size	.0885 (0.43)	.0842 (0.40)	.1810 (0.87)	-.0052 (-0.02)
NEDs	**.7883*** (1.85)	**.9007**** (2.11)	**1.055**** (2.48)	**.8599**** (2.03)
Institutional Shareholdings	.2103 (0.71)	.1829 (0.61)	.3498 (1.18)	.2676 (0.90)
CEO Dummy	**.4208**** (2.46)	**.4145**** (2.42)	**.3951**** (2.32)	**.4303**** (2.52)
Const	1.057 (0.54)	1.987 (1.10)	2.5372 (1.49)	1.722 (0.95)
F test	14.42***	14.23***	15.35***	14.53***
R^2	0.3699	0.3727	0.3348	0.4101
Hausman Test	40.33***	34.33***	71.07***	37.31***
Fixed or Random	Fixed	Fixed	Fixed	Fixed
Observations (N)	905	905	905	905

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

Other significant determinant of long-term incentive pay, as found consistently in all other models, is the CEO position, i.e. whether executive is a CEO or not. A positive and significant coefficient of CEO dummy variable, in all performance regressions, means that

there is significant difference between long-term incentives granted to the CEO and to other executive directors.

The coming section presents the empirical results examining the determinants of long-term incentives value from executive's perspective and also to test the hypothesis on the difference in determining long-term incentive cost and its value to executive. As presented in Table 6.7, the significance of the performance variables is dependent on the measure of performance used. The shareholder return (TSR) and accounting return (ROCE) is positive and significant, while the TobinQ and earning per share (EPS) measures are negative and insignificant. The finding that shareholder return and ROCE measure are significant is consistent with the results in total pay model and cash pay model. Comparing the performance coefficient in cost-of-incentive model (Table 6.6) and incentive value model (Table 6.7), shareholder return has no significant effect on the level of incentives granted to executives; it, however, is a significant determinant of the value of incentives to be received by executives. According to the results presented in Table 6.9, the relationship between shareholder return and incentive pay is not statistically different between the use of incentive cost to company and incentive value to executive. The same result also noted for other performance measures.

Furthermore, the relationship between lagged performance and incentive value also conflicts between performance measures used. The coefficient on performance variable is positive and significant when performance is measured in ROCE suggesting that lagged accounting rate of return (ROCE) has a significant effect on the level of executive's incentive value. However, the coefficient of absolute accounting performance (EPS) is negative and significant. The market-based performance measures (TSR, TobinQ) do not have any effect on the value of incentive pay to executive directors.

Table 6-7: Determinants of Incentive Pay – Value to executives

(OLS Regression)

Dependent Variable: Incentive Pay (Value to Exes)	Performance Variables			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Performance	**.1866*** (1.92)	-.0216 (-0.77)	**.0628**** (2.15)	-.0014 (-1.18)
Lag Performance	.0365 (0.44)	-.0089 (-0.71)	**.0156***** (2.94)	**-.0019*** (-1.93)
Log of Firm's Market Valuation	.0409 (0.38)	.1499 (1.56)	.1156 (1.29)	**.2418**** (2.41)
Executive Ownership	67.53 (1.17)	74.129 (1.28)	70.458 (1.22)	70.264 (1.22)
Executive Tenure	.0278 (1.00)	.0325 (1.18)	.0374 (1.36)	.0352 (1.28)
Executive Age	.0203 (0.81)	.0202 (0.80)	.0247 (0.99)	.0202 (0.81)
Log of Board Size	.2315 (0.85)	.1953 (0.71)	.3416 (1.24)	.0958 (0.35)
NEDs	.7131 (1.28)	.5616 (1.01)	.8142 (1.47)	.5081 (0.92)
Institutional Shareholdings	-.3368 (-0.89)	-.3926 (-1.03)	-.1729 (-0.46)	-.2118 (-0.56)
CEO Dummy	.3541 (1.56)	.3713 (1.63)	.3547 (1.57)	**.3881*** (1.71)
Const	**8.996***** (3.57)	**6.867***** (3.04)	**6.745***** (3.14)	**5.109**** (2.23)
F test	3.47***	3.24***	3.94***	3.90***
R^2	0.0007	0.0023	0.0022	0.0068
Hausman Test	40.99***	27.94***	41.53***	18.17**
Fixed or Random	Fixed	Fixed	Fixed	Fixed
Observations (N)	778	778	778	778

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

Table 6.7 also indicates that the coefficient on firm size variable is insignificant all performance regressions, except for the absolute accounting measure EPS. This result is inconsistent with the findings in earlier empirical models, where firm size always has a significant effect on the level of executive compensation (both cost and value of total

compensation, cash compensation and cost of incentives). The insignificant coefficient on size variable suggests that firm size, as measured in log of market valuation of company, has no effect on the level of net incentive pay to executives.

Moreover, even the coefficient on CEO dummy variable is also insignificant, except for the EPS models, suggesting that there is no evidence of a difference in the level of incentive value to be received by CEO and other executive directors. However, the conclusions which may be drawn from these findings are somewhat limited. Firstly, the data sample size has dropped dramatically with the exclusion of observation where net incentive value is equal to zero. This exclusion bring the sample size from 1137 observations in total pay model and 905 observations in cost-of-incentive model to 778 observations in incentive-value model. The exclusion of these observations may cause the problem of biased estimates of the determinants of executive compensation. Secondly, the overall fit of the models is very low compared to the results presented earlier in this chapter. The overall fit of the model (R^2) is less than 1% in all four regressions. Although the F test is significant, suggesting the models are still significant, F statistic has declined sharply from over 40 in cash pay model and over 20 in total pay model to just 3.5 in incentive value model.

Controlling for possible autocorrelation and time varying incentive pay, the Arellano-Bond regression results (Table 6.8) confirm the finding in OLS model that there is no evidence of a difference between the value of incentive pay to the CEO and other executives. According to Arellano-Bond estimator, there is no autocorrelation (second order Arellano-Bond test statistic is insignificant) in the model and the instrumental variables are valid (Sargan test of overidentifying restrictions is insignificant). Table 6.8 also indicates that firm performance does not have a significant effect on the value of incentive pay. However, there is evidence that firm size is a significant determinant of incentive pay value, except for shareholder return (TSR) model. Other significant effect on the value of incentive pay is the age of executive, however the 95% confidence interval of the coefficient includes

zero in all four regression, suggesting that the coefficient on executive age is not statistically different from zero. All other executive's individual variables (shareholding and tenure) and monitoring function variables (Board size, NEDs, and institutional shareholding) are insignificant.

Table 6-8: Determinants of Incentive Pay – Value to Executives (Arellano-Bond GMM Estimator)

Dependent Variable: Incentive Pay (Value to Exes)	Performance Variables			
	TSR	TobinQ	ROCE	EPS
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Lag Dependent Variable	**.4320***** (3.08)	**.4113***** (2.91)	**.4153***** (2.97)	**.3946***** (2.71)
Performance	.1294 (1.13)	-.0216 (-0.36)	.0896 (0.93)	-.0014 (-0.57)
Log of Firm's Market Valuation	.2696 (1.56)	**.3823**** (2.25)	**.3554**** (2.17)	**.3987**** (2.34)
Executive Ownership	-143.68 (-0.81)	-105.30 (-0.60)	-103.87 (-0.59)	-101.19 (-0.58)
Executive Tenure	-.0056 (-0.06)	-.0060 (-0.06)	-.0079 (-0.08)	-.0038 (-0.04)
Executive Age	**.2352*** (1.70)	**.2345*** (1.70)	**.2374*** (1.72)	**.2277*** (1.66)
Log of Board Size	-.1566 (-0.38)	-.1163 (-0.28)	-.0986 (-0.24)	-.1380 (0.33
NEDs	-1.277 (-1.26)	-1.218 (-1.21)	-1.284 (-1.27)	-1.140 (-1.12)
Institutional Shareholdings	.3624 (0.53)	.3892 (0.57)	.3888 (0.57)	.3830 (0.57)
CEO Dummy	.6514 (1.52)	.6304 (1.48)	.6279 (1.47)	.6288 (1.49)
Const	**-.2970**** (-2.14)	**-.3013**** (-2.18)	**-.2979**** (-2.15)	**-.2912**** (2.10)
Sargan Test	4.44	5.00	5.50	4.37
Arellano-Bond order 1	-5.19***	-5.13***	-5.17***	-5.03***
Arellano-Bond order 2	0.10	0.26	-0.13	0.20
Observations (N)	287	287	287	287

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

Table 6-9: Comparison results between cost models and value models

Variables	TSR (z-value)	TobinQ (z-value)	ROCE (z-value)	EPS (z-value)
Performance	-0.122	-0.206	0.001	0.001
Lag Performance	-0.080	0.016	0.000	0.000
Log of Firm's MV	0.075	0.043	0.042	0.026
Executive Ownership	-56.37***	-57.18***	-57.22***	-55.79***
Executive Tenure	0.013	0.010	0.009	0.010
Executive Age	0.009	0.008	0.007	0.008
Log of Board Size	-0.150	-0.136	-0.106	-0.288
NEDs	0.033	0.145	0.084	0.158
Institutional Shareholdings	0.481	0.481	0.413	0.452
CEO Dummy	0.023	0.015	0.014	0.014

***: *Statistically significant at 1% level*

Overall, the level of incentives granted to executive director is significantly determined by the firm size (market valuation), executive tenure and age, proportion of non-executive directors in the board, and the CEO position (CEO dummy variable). These variables, however, do not have a significant effect on the value of those incentives to executives, except for firm size variable in Arellano-Bond models. With regard to firm performance variable, only accounting return measured in ROCE has significant and positive coefficient with the cost of incentives, while both TSR and ROCE has significant effect on the value of those incentives to executives. The conclusion that might be drawn from these is limited due to the drop of variables and very low level of fitness of the models.

Summary of empirical tests of the presented hypotheses on the determinants of executive pay components is recapped in the following table.

Table 6-10: Summary of hypotheses and empirical results

Hypotheses	*Description*	*Cash Pay Model*	*Incentives Pay Model*	*Total Pay Model*
H1	Executive pay components and executive pay structure are positively related to firm performance	Supported	Varies, weakly supported	Supported
H2	The relationship between firm performance and executive compensation is affected by the use of cost pay or pay value as measures of executive pay	Not applicable	Mostly no evidence	Mostly no evidence
H3	Executive pay components and pay structure are positively related to firm size	Supported	Supported	Supported
H4a	Executive pay components and pay structure are negatively related with executive shareholdings	No evidence	No evidence	No evidence
H4b	Executive pay components and pay structure is positively related with executive shareholdings	No evidence	No evidence	No evidence
H5	Executive pay components and pay structure are positively related to executive tenure and executive age	Supported	Supported	Supported
H6	Executive pay components and pay structure are negatively related to the level monitoring and the effectiveness of the board	Varies, mostly no evidence	Mostly no evidence	Mostly no evidence

6.2 Determinants of the Proportion of Incentive Pay in Total Compensation

This section presents empirical results testing hypotheses on the determinants of the ratio of long-term incentive pay to total compensation for executive directors. As discussed in Chapter 4, the set of hypotheses on the determinants of incentive pay ratio (pay structure) is recapped as follows.

H1: *Executive pay components and executive pay structure are positively related to firm performance*

H3: *Executive pay components and pay structure are positively related to firm size*

H4a: *Executive pay components and pay structure are negatively related with executive shareholdings*

H4b: *Executive pay components and pay structure is positively related with executive shareholdings*

H5: *Executive pay components and pay structure are positively related to executive tenure and executive age*

H6: *Executive pay components and pay structure are negatively related to the level monitoring and the effectiveness of the board*

The empirical results on the determinants of long-term incentive pay ratio are presented in Table 6.11 to Table 6.13. The incentive pay ratio is determined for both cost-to-company and value-to-executive measures using OLS estimator and Arellano-Bond GMM estimator. As presented in Table 6.11, which shows the results on the determinants of cost of incentive pay ratio using OLS estimator, the ratio of long-term incentive pay ratio at cost is strongly determined by firm size (measured in natural logarithm of firm's market valuation), executive tenure and age, and the CEO position (CEO dummy variable) in all performance regressions. A strong correlation between firm size and the ratio of long-term incentive pay

means that in bigger firm, executive directors tend to be granted larger proportion of long-term incentives in the compensation package. This result supports the managerial power argument that in larger firm, executives try to 'camouflage' their extraction of 'rent' through the greater used of long-term incentives rather than observable cash pay in order to avoid the 'outrage'. It is also consistent with the notion that large firm, who pay their executives much higher than small firm, tries to ease public criticism by reducing the level of cash pay and increasing long-term incentives for the same total (high) compensation paid to executives.

The effect of executive tenure and age on the ratio of long-term incentive pay, however, has opposite sign. The coefficient on executive tenure variable is positive and significant in all performance regressions, while the coefficient on executive age is negative and significant. The positive coefficient on executive tenure variable suggests that the longer tenure in the position, the larger proportion of long-term incentive pay to be granted to executives. This result is consistent with agency theory argument (hypothesis H5) for a positive relationship between executive tenure and the proportion of incentive components. However, the effect of executive age on the proportion of incentive pay is in opposite way, a negative and significant relationship. This is inconsistent with the notion that by the time (age), executives become more risk-neutral and willing to accept a highly incentive compensation contract. Furthermore, the significant effect of CEO position (CEO dummy variable) on the proportion of incentive pay indicates that when an executive becomes CEO, he/she is paid not only significant higher total pay (as found earlier) but also higher proportion of long-term incentive pay.

Table 6-11: Determinants of Incentive Pay Ratio– Cost to company

(OLS regression)

Dependent Variable: Percentage of Incentive Pay (Cost to company)	Performance Variables			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Performance	.0031 0.16	**-.0201***** (-4.16)	**.0177***** (4.57)	-.0001 (-0.24)
Lag Performance	-.0081 (-0.50)	.0002 (0.10)	**.0042***** (5.28)	**-.0005**** (-2.35)
Log of Firm's Market Valuation	**.0758***** 3.43	**.1135***** (5.69)	**.0667***** (3.64)	**.0890***** (4.41)
Executive Ownership	-.0174 (-0.02)	.0897 (0.12)	-.0537 (-0.07)	-.0188 (-0.03)
Executive Tenure	**.0137**** (2.31)	**.0128**** (2.20)	**.0141**** (2.44)	**.0143**** (2.44)
Executive Age	**-.0111*** (-1.95)	**-.0136**** (-2.45)	**-.0105*** (-1.89)	**-.0112**** (-1.99)
Log of Board Size	.0701 (1.29)	.0214 (0.40)	**.0968*** (1.82)	.0508 (0.94)
NEDs	-.1486 (-1.40)	-.1112 (-1.07)	-.1283 (-1.24)	-.1564 (-1.48)
Institutional Shareholdings	-.0170 (-0.22)	-.0472 (-0.63)	.0141 (0.19)	-.0039 (-0.05)
CEO Dummy	**.1251***** (3.39)	**.1219***** (3.37)	**.1189***** (3.29)	**.1275***** (3.47)
Const	**-.9114*** (-1.78)	**-1.437***** (-3.15)	**-.8295*** (-1.92)	**-1.130**** (-2.43)
F test	4.16***	7.35***	7.79***	4.85***
R^2	0.1200	0.1522	0.1280	0.1388
Hausman Test	17.50*	38.48***	21.39**	38.59***
Fixed or Random	Fixed	Fixed	Fixed	Fixed
Observations (N)	1137	1137	1137	1137

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

The sign and significance of the relationship between firm performance and incentive pay ratio is dependent on the performance measures used. The coefficient of accounting return variable ROCE is positive and significant, suggesting that accounting return (ROCE) has significant role in determining the percentage of incentive pay in total

executive pay. However, the coefficient of market-based performance variable Tobin's Q is negative and significant suggesting a negative relationship between Tobin'Q and incentive pay ratio. Other performance measures (TSR and EPS) do not have an effect on the ratio of incentive pay of executive directors. When considering the effect of lagged performance, lagged accounting return ROCE is positively and significantly related to incentive pay ratio, while lagged TobinQ and TSR coefficients are insignificant, lagged EPS coefficient is negative and significant. In sum, the effect of firm performance on incentive pay ratio is only significant consistently when performance is measured in ROCE; other performance measures have conflict or insignificant coefficients.

With regard to the effect of the monitoring function (the role of the board and institutional shareholder) in shaping the components of compensation package for executives, all three variables representing the monitoring function have insignificant coefficients. The coefficient on non-executive director variable (NEDs) and institutional shareholding variable is negative suggesting that the dominance of non-executive directors in the board and institutional shareholders help to increase the level of monitoring executives to effectively reduce the proportion of pay relating to firm performance, according to agency theory. This effect, however, is not statistically significant in all performance regressions.

The overall fit of the model is roughly 13% suggesting that linear OLS regression model explains about 13% of the variation in executive incentive compensation ratios. While not too low, this R^2 points to the need for further investigation to explain this phenomenon more fully. By using lags of levels and first-differences of independent variables as instruments to control for time varying incentive pay ratio, Arellano-Bond estimator not only removes unobserved firm-specific effects but also time-invariant explanatory variables. As presented in Table 6.12, Arellano-Bond GMM regression results confirm that firm size is a primary determinant of incentive pay ratio, except for shareholder return (TSR) equation. The effect of firm performance on incentive pay ratio is only significant in ROCE model,

which is consistent with the conclusion made in OLS model that the relationship between firm performance and incentive pay ratio is only positive and significant when performance is measured in ROCE. Table 6.12 also indicates that executive tenure is positively and significantly related to incentive pay ratio, while the coefficient on executive age is negative and insignificant. This result once again suggests that longer tenure is connected with higher proportion of incentive pay granted to executives.

Table 6-12: Determinants of Incentive Pay Ratio– Cost to Company (Arellano-Bond GMM Estimator)

Dependent Variable: Proportion of Incentive Pay (Cost to Co.)	**Performance Variables**			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Lag Dependent Variable	**.2466***** (3.26)	**.2343***** (3.12)	**.2802***** (3.62)	**.2335***** (3.10)
Performance	.0321 (1.50)	.0022 (0.23)	**.0209***** (4.77)	.0001 (0.14)
Log of Firm's Market Valuation	.0487 (1.47)	**.0790**** (2.49)	**.0719**** (2.40)	**.0811***** (2.57)
Executive Ownership	1.958 (1.38)	1.952 (1.38)	1.966 (1.41)	1.949 (1.38)
Executive Tenure	**.0535***** (3.91)	**.0537***** (3.94)	**.0530***** (3.93)	**.0536***** (3.93)
Executive Age	-.0204 (-0.66)	-.0207 (-0.67)	-.0196 (-0.64)	-.0203 (-0.66)
Log of Board Size	**.1996***** (2.68)	**.1953**** (2.60)	**.1940***** (2.66)	**.1946***** (2.61)
NEDs	.0220 (0.16)	.0092 (0.06)	.0467 (0.27)	.0094 (0.06)
Institutional Shareholdings	.0894 (0.76)	.0877 (0.74)	.0360 (0.31)	.0906 (0.77)
CEO Dummy	**.1786***** (3.57)	**.1773***** (3.56)	**.1648***** (3.34)	**.1770***** (3.55)
Const	-.0435 (-1.40)	-.0451 (-1.46)	-.0458 (-1.49)	-.0458 (-1.47)
Sargan Test	7.36	6.33	7.85	6.33
Arellano-Bond order 1	-6.63***	-6.71***	-6.46***	-6.69***
Arellano-Bond order 2	1.73*	1.74*	0.87	1.72*
Observations (N)	514	514	514	514

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

Another important result from Arellano-Bond regression is the positive and significant relationship between the size of the board and the proportion of incentive pay granted to executive directors. This result indicates that larger number of board members is associated with higher use of long-term incentives to pay executive directors. Hence it supports the agency argument that when the size of the board is getting large, the monitoring function is diminishing and incentive contract is needed to align the interests of executives with those of shareholders. The other two monitoring variables (dominance of non-executive directors and institutional shareholding) do not have any effect on the determinants of incentive pay ratio. Once again the CEO position (CEO dummy) has significant effect on the ratio of the cost of incentive pay. Overall, Arellano-Bond estimator produces the same results as OLS fixed effects estimator except for the significant effect of board size coefficient. The Sargan test statistic is insignificant in any regressions suggests that there is no evidence of overidentifying restrictions or the GMM estimation is consistent. The Arellano-Bond order 2 test statistic is significant at 10% level suggesting that there is autocorrelation in the model. However, the problem of autocorrelation is not serious at 5% level of significance in all 4 performance equations. Hence the instruments are still valid at 5% significance level and the Arellano-Bond GMM estimation is unbiased.

To examine the difference between the cost of long-term incentive pay and its actual value to executives in the determination of incentive pay ratio, the following Table 6.13 presents empirical results on the determinants of the ratios of incentive value. Unlike the cost-of-incentive model, firm size does not have any significant effect on the ratio of incentive pay, except for the Tobin Q regression. On the other hand, both current and lagged shareholder return and accounting return in ROCE are positively and significantly correlated with incentive pay ratio. This result indicates that the ratio of incentive pay in value is strongly determined by both current year performance and prior year performance. This is consistent with the fact that the value of long-term incentive pay is partly determined based

on current firm performance. The normal vesting period of long-term incentives (options and LTIPs) is three years start from the beginning of the granting year (i.e. the first assessment year is current year performance). Hence higher firm performance (TSR and ROCE) is associated with higher value of incentives and higher proportion of incentive pay in total executive compensation, ceteris paribus. However, the coefficient on Tobin Q variable is negative and significant indicating that higher Tobin's Q is related with lower ratio of incentive pay value. Firm performance measured in EPS has no significant effect on the ratio of incentive pay value.

Also indicated in Table 6.13, executive's individual contingencies have a significant effect on the ratio of incentive value to executives. Consistent with cost-of-incentive ratio model, executive tenure is positively and significantly correlated with the ratio of incentive value indicating that longer tenure on the position helps executives gain more long-term incentive pay. The coefficient on executive age variable also negative and significant as in cost incentive ratio model suggesting that older executive tends to earn less long-term incentives in total compensation. Moreover, there is strong evidence that executive share ownership is negatively related to the ratio of incentive pay value. The coefficient on executive ownership variable is negative and significant in all four performance regressions; indicating that when executive directors hold more shares in the company, they tend to receive less long-term incentives in their total compensation. The result is consistent with agency argument (hypothesis H4a) that higher existing shareholding prevents executives from accepting further risk bearing by higher performance-related compensation contract.

Table 6-13: Determinants of Incentive Pay Ratio – Value to executives (OLS Regression)

Dependent Variable: Proportion of Incentive Pay (Value to Exes)	Performance Variables			
	TSR	TobinQ	ROCE	EPS
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Performance	**.0542*** ** (2.98)	**-.0123*** ** (-2.64)	**.0167*** ** (4.50)	.0000 (0.06)
Lag Performance	**.0356** ** (2.28)	-.0026 (-1.13)	**.0042*** ** (5.50)	**-.0004** ** (-1.96)
Log of Firm's Market Valuation	-.0233 (-1.11)	**.0387** ** (2.02)	.0042 (0.24)	.0213 (1.10)
Executive Ownership	**-1.924*** ** (-2.70)	**-1.834*** ** (-2.60)	**-1.961*** ** (-2.80)	**-1.932*** ** (-2.70)
Executive Tenure	.0084 (1.49)	**.0097** * (1.75)	**.0113** ** (2.06)	**.0114** ** (2.02)
Executive Age	**-.0110** ** (-2.04)	**-.0116** ** (-2.17)	**-.0089** * (-1.69)	**-.0098** * (-1.81)
Log of Board Size	.0207 (0.40)	-.0386 (-0.74)	.0355 (0.70)	-.0061 (-0.12)
NEDs	-.0449 (-0.44)	-.0607 (-0.61)	-.0628 (-0.63)	-.0851 (-0.84)
Institutional Shareholdings	-.0507 (-0.70)	-.0748 (-1.03)	-.0057 (-0.08)	-.0273 (-0.38)
CEO Dummy	**.0825** ** (2.35)	**.0822** ** (2.36)	**.0778** ** (2.25)	**.0853** ** (2.42)
Const	**1.227** ** (2.51)	.1169 (0.27)	.4844 (1.17)	.2843 (0.64)
F test	2.74***	4.05***	5.46***	2.18**
R^2	0.0058	0.0529	0.0318	0.0431
Hausman Test	24.86***	34.56***	16.08*	20.23**
Fixed or Random	Fixed	Fixed	Fixed	Fixed
Observations (N)	1137	1137	1137	1137

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

The relationship between the board monitoring function, institutional shareholding and the proportion of incentive value in total executive pay is not confirmed. The coefficient on board size, non-executive director and institutional shareholding variables is statistically insignificant in all performance regressions. However, once again the CEO position has a

significant effect on the ratio of incentive value for executive directors. The CEO dummy coefficient is positive and significant in all regressions suggesting that there is evidence of a difference in the structure of compensation for the CEO and other executives. In economic term, the coefficient of approximately 0.08 means that when an executive become CEO, he/she receives a compensation package with 8% higher in the proportion of long-term incentive pay components.

Table 6-14: Comparison results between cost models and value models

Variables	TSR (z-value)	TobinQ (z-value)	ROCE (z-value)	EPS (z-value)
Performance	-0.017	-0.002	0.000	0.000
Lag Performance	-0.019	0.002	0.000	0.000
Log of Firm's MV	0.027	0.012	0.017	0.015
Executive Ownership	0.706	0.739	0.681	0.709
Executive Tenure	0.002	0.001	0.001	0.001
Executive Age	0.000	-0.001	-0.001	-0.001
Log of Board Size	0.037	0.071	0.031	0.060
NEDs	-0.071	-0.041	-0.047	-0.042
Institutional Shareholdings	0.046	0.023	0.096	0.061
CEO Dummy	0.010	0.010	0.010	0.010

The comparison between cost model and value model of the determinants of incentive pay ratio is presented in Table 6.14. According to the empirical results in Table 6.14, there is no evidence of a difference between using cost model and value model in determining executive pay structure. Again, there's no evidence to support Hypothesis H2.

Summary of empirical tests of the presented hypotheses on the determinants of executive pay structure (incentive pay ratios) is recapped in the following table.

Table 6-15: Summary of hypotheses and empirical results

Hypotheses	*Description*	*Incentive Pay Ratios Model*
H1	Executive pay components and executive pay structure are positively related to firm performance	Supported
H2	The relationship between firm performance and executive compensation is affected by the use of cost pay or pay value as measures of executive pay	No evidence
H3	Executive pay components and pay structure are positively related to firm size	Supported
H4a	Executive pay components and pay structure are negatively related with executive shareholdings	Supported (value model)
H4b	Executive pay components and pay structure is positively related with executive shareholdings	Rejected
H5	Executive pay components and pay structure are positively related to executive tenure and executive age	Supported
H6	Executive pay components and pay structure are negatively related to the level monitoring and the effectiveness of the board	Mostly no evidence

Overall, the empirical analyses of the determinants of long-term incentive pay ratio suggest that firm's market valuation has a positive and significant effect on the ratio of incentive pay granted to executive directors. This relationship, however, is statistically insignificant when the ratio of incentive value is used as dependent variable. The result suggests that whilst the size of the firm shapes the balance between components of executive pay, in which there is higher proportion of incentive pay components for a larger firm; there is no evidence of such effect on the ratio of actual value of incentives in total executive compensation. The relationship between firm performance and the ratio of incentive pay is dependent on the performance measures used. The cost of incentive ratio is significantly determined by accounting return in ROCE, while the ratio of net incentive value is determined by both shareholder return (TSR) and accounting return (ROCE). With regard to executive's individual variables, executive tenure still has significant effect on both ratios of

cost and value of long-term incentive pay suggesting that executive with longer tenure tend to accept higher proportion of incentive pay components in their total compensation contract. Executive age also has significant effect on incentive pay ratio but with opposite sign and the relationship is only presented in OLS fixed effects regressions. Executive share ownership variable is negatively and significantly related to the ratio of incentive value, indicating that higher existing shareholding will prevent executives from accepting further incentive components in their compensation package.

The monitoring function of the board and institutional shareholders do not have any effect on the ratio of long-term incentives in total executive pay, except for the coefficient on board size variable, which is positive and significant when controlling for lagged incentive pay ratio using Arellano-Bond estimator. The CEO position, on the other hand, is strongly correlated with the ratio of incentive pay. The results implying that when an executive director becomes CEO, he/she is not only paid higher compensation but also higher proportion of long-term incentives in their total pay. The overall fit of the model, however, is quite modest with only 12% explanation in the cost model and less than 5% explanation in the value model.

6.3 Conclusion

This chapter has empirically examined the determinants of executive pay components and the ratio of incentive pay to total executive compensation. A number of findings have emerged from the analysis. Firstly, the effect of firm performance on the level of pay components as well as the incentive pay ratio is dependent on the performance measures used. Shareholder return (TSR) has a significant effect on both the level of cash pay and total executive pay; its coefficient, however, is insignificant in the incentive pay model. In the pay ratio model, shareholder returns have no effect on the ratio of the incentive

pay's cost, but does play an important role in determining the ratio of the value of incentive pay to total compensation. The finding is inconsistent with agency theory and supports the managerial power argument for higher levels of cash pay and total pay rather than risky long-term incentive pay. On the other hand, accounting returns measured in ROCE is strongly related to pay components, except for the cash pay model, and incentive pay ratio model. This result suggests that accounting performance (ROCE) is a significant determinant of the incentive pay level and ratio, supporting agency theory for a higher level of performance-related pay components. Other performance measures (TobinQ and EPS) are mostly insignificant and conflicts in sign of the relationship with executive pay. Although there is evidence of significant relationship between firm performance (shareholder return and ROCE) and pay components as well as incentive pay ratio; the economic significance of the relationship is small, which is consistent with the findings of Jensen and Murphy (1990). Lagged performance, again in shareholder return and accounting return ROCE, is a determinant of total pay and incentive pay ratio but not cash pay or incentive pay components. In sum, the pay-performance relationship seems sensitive to performance measures used. As already noted, this may be due to the difference in nature of performance measures (TSR and Tobin's Q). This finding indicates that choice of measurement has an impact on pay-performance sensitivity.

Secondly, firm size as measured by the natural logarithm of market valuation has a significant effect on the level of pay components (cash pay, incentive pay and total pay) in most regressions. The result is consistent with the notion that larger firm tends to have larger compensation packages for their executives. The coefficient on the firm size variable is also positive and significant in the incentive-cost-ratio model, however, it is insignificant in incentive-value-ratio model. The finding indicates that although firm size determines the level of pay components, it fails to determine the proportion of incentive value in total executive pay.

With regard to the individual contingencies of executive directors, tenure is found to have a consistently strong effect on the determinants of both pay components and pay ratio. A positive and significant coefficient of executive tenure implies that with longer tenure, executives tend to be granted higher compensation with a larger proportion of pay including incentive components. The finding of a positive relationship between tenure and the level of pay components is consistent with the managerial power theory, which argues that long tenure is associated with higher power to extract 'rent' to the detriment of shareholder interests. The positive tenure coefficient in the incentive pay ratio model, however, is consistent with agency theory which suggests that executives with longer tenure tend to be more risk-neutral and accept a higher proportion of pay in long-term incentives for a higher return. The other individual variable, executive shareholdings, does not have any significant effect on pay component except for the value of total pay when controlling for lagged pay in the model. However, executive shareholding strongly and negatively determines the ratio of incentive pay value indicating that higher existing shareholding will prevent executives from accepting further incentive components in their compensation package.

Among variables representing the monitoring function, board size has a positive effect on the level of total pay (cost model) and is positively related with the proportion of long-term incentives to total executive pay. This finding is consistent with agency arguments that larger boards diminish the monitoring function and thus incentive contracts, a substitute mechanism, are preferred to align executive-shareholder interests. The presence and dominance of non-executive directors on the board is found to be negatively related to cash pay but positively related to incentive pay. Although this result does not support agency arguments that the presence of non-executive directors helps to increase monitoring, it is consistent with the notion that the dominance of non-executive directors helps to reduce the level of cash pay and increase the level of incentive pay, i.e. enhances the use of incentive contracts. Hence, non-executive directors may prefer to use alternative means, rather than the enforcement of monitoring, to align the interest of executives with those of shareholders.

The role of institutional shareholders is not clear in determining the level of pay components and incentive pay ratio.

Moreover, the analysis also indicates that while there is a difference in the determination coefficients in empirical models using cost pay and pay value as dependent variables, the difference is not statistically significant according to Z-values. Another important finding in this chapter is the significant and positive relationship between CEO position (CEO dummy) with both the level of pay components as well as the ratio of incentive pay. In economic terms, when an executive director becomes a CEO, his / her compensation increases by 73% in total cost pay and 64% in total pay value. The significant difference between CEO compensation and other executives' is consistent with tournament theory, which suggests that the position in the organisational hierarchy may out-weigh the importance of the marginal performance as the main determinant of executive pay. The empirical results on the testing of tournament theory are presented in the following chapter.

Chapter 7

EMPIRICAL RESULTS OF TESTING TOURNAMENT THEORY ON THE DETERMINANTS OF EXECUTIVE COMPENSATION

7.0 Introduction

As discussed in Chapter 6, it is likely that the position of the executive director plays an important role in determining the level of executive compensation. Specifically, the CEO position has a significant effect on all measures of executive compensation level, suggesting that the CEO pay is significantly higher than other executives' pay. Theoretically, tournament theory suggests that the rank-order in organisational hierarchy is a main determinant of executive pay (Lazear and Rosen, 1981a). In addition, tournament theory predicts that the pay difference increases as one moves up in the organisational hierarchy. The convexity of the relationship between the shape of executive compensation and organisational level is a key prediction of the tournament models implying the operation of tournaments based on relative performance. The second aspect of tournament theory is the effect of the number of contestants competing in the tournament on the size of tournament prize. The efficiency of the tournament pay structure is also an important aspect indicating the effect of pay dispersion on firm performance and on average executive pay. The purpose of this chapter is to present an empirical analysis of these predictions of tournament theory.

This chapter is structured as follows. Section 7.1 provides some details of the samples and empirical models (in addition to those reported in Chapter 5) to be used in examining the predictions of the tournament theory. Section 7.2 presents a univariate analysis of the variables used in the analysis. Section 7.3 discusses the empirical analyses of the hypotheses derived from tournament theory. In particular, the empirical results examining the convex relationship between executive pay and organisational level are

presented in subsection 7.3.1. Subsection 7.3.2 presents the empirical test of the relationship between tournament prize and the number of contestants. The effect of pay dispersion on firm performance and average pay is examined in subsection 7.3.3 and 7.3.4, respectively. Finally, section 7.4 presents a discussion and conclusions.

7.1 Sample and Empirical Models

There are two samples to be used in the analyses presented in this chapter. The first sample is as described in Chapter 5 and consists of 345 executive directors collected from 50 companies in five years 2001-2005 (unbalanced sample). This sample is used to test the first prediction of the tournament theory (Hypothesis 7) that there is a convex relationship between executive compensation and organisational level.

H7: *There is convex relationship between executive compensation and organisational level.*

The model for testing this relationship takes the following form:

$$Ln\ (Pay) = \alpha + \beta_1 Rank1 + \beta_2 Rank2 + \beta_3 Shareholder\ Return + \gamma Control$$

(Model 7.1)

where *Rank1* is a dummy coded 1 if an executive is CEO (Level 1), 0 otherwise; *Rank2* is a dummy coded 1 if an executive's position is in Level 2 and 0 otherwise. In the data set, executive directors are allocated to three distinct organisational levels based on their job title/role provided in the annual reports and accounts. Level 1 – CEO (*Rank1*) is the chief executive with highest authority in the company. Level 2 – higher executive (*Rank2*) is an executive with highest authority within a division. This includes managing directors of major divisions or business units, executive chairman, chief operating officer (COO), chief

finance officer (CFO). Level 3 – other executives (which is the reference category and omitted in the model) includes executive directors with mainly functional duties such as human resource director, legal director, personnel director, development director, marketing director, etc. This classification is consistent with Conyon *et al* (2001) and Lambert *et al* (1993). Executive pay, shareholder returns and control variables are as defined in Chapter 5. Control variables include firm size, executive tenure, age, percentage of non-executive directors and institutional shareholdings. These control variables are those reported in Chapter 6 to have strong or partly effect on the level of executive pay.

The second sample to be used to test the tournament theory consists of 50 UK quoted companies in five years (balanced sample), which results in a total of 250 observations. For each observation, the pay gap between the CEO and other executive directors and the dispersion of pay within the executive team are examined, considering the relationship between pay gap and the number of contestants; and the effect of pay dispersion on firm performance; and average pay. This sample is used to test these three other predictions of the tournament theory. The empirical models to be used to examine these predictions are described as follows.

As discussed in Chapter 4, tournament theory predicts that the tournament prize (or pay gap) is positively related to the number of contestants (Hypothesis 8).

H8: *The tournament prize (the gap between compensation levels) is positively related to the number of contestants (number of executives on the board)*

Hence, the second model has the form:

$$Pay\ Gap = \alpha + \beta_1 Ln(Number\ of\ contestants) + \beta_2 Ln(Size)$$

(Model 7.2)

where *Pay Gap* is the log of CEO pay minus the log of average pay received by non-CEO (i.e. Level 2) executive team. This procedure is consistent with O'Reilly *et al* (1988), Main *et al* (1993), Eriksson (1999), and Conyon *et al* (2001). Three measures of pay gap are calculated for cash pay, long-term incentive pay, and total pay. Tournament prize (pay gap) is also calculated for the cost of pay to company and the value of pay to executives, which results in five different measures of pay gap. The number of contestants is the group of candidates that compete for the CEO position and is identified as the number of non-CEO (i.e. Level 2) executive directors. This measure is consistent with that used by Conyon et al (2001).

The third aspect of the tournament theory discussed in Chapter 4 (Hypothesis 9) relates to the effect of pay dispersion of executive team on firm performance.

H9: *Pay dispersion is positively related to firm performance*

This model has the form:

$$Firm\ Performance = \alpha + \beta_1\, Pay\ Dispersion + \beta_2\, Ln(Average\ Executive\ Pay) + \beta_3\, Ln(Size) \quad \text{(Model 7.3)}$$

Firm performance has four different measures: total shareholder return (TSR), Tobin's Q, return on capital employed (ROCE), and earning per share (EPS) as described in Chapter 5. The pay dispersion variable is constructed as the coefficient of variation of total pay for the executive team. This is the general procedure used by Main *et al* (1993), Eriksson (1999), and Conyon *et al* (2001). Average total pay of the executive team is also included in the model to control for the effect of average pay on firm performance, which is in line with Main *et al* (1993) and Eriksson (1999).

The fourth model tests the effect of pay dispersion on average pay of executive team and has the following form:

H10: *Average pay level of executive team is positively related to pay dispersion.*

Model: $Ln(Average\ Pay) = \alpha + \beta_1 Pay\ Dispersion + \beta_3 Ln(Size)$

(Model 7.4)

where average pay is the average of total pay received by the executive team; and pay dispersion has two alternative measures: the coefficient of variation of total pay (as defined in Model 7.3) and CEO-contestants differential (as defined in Model 7.2). This is consistent with the procedure used by Main et al (1993) and Eriksson (1999).

These models are tested using a series of OLS fixed effects regressions of the dependent variables on the independent variables and control variables. In terms of executive pay, both cost of pay and pay value are used to measure pay and both results of the empirical analysis using cost pay and pay value are presented to examine the effect of using different pay measures on the relationships predicted by tournament theory.

7.2 Descriptive Analysis of Variables

The structure of compensation data with various components of compensation for executives in different organisational levels is presented in Table 7.1. As Table 7.1 illustrates, executive director in higher organisational position does receive higher average total pay and also higher levels of each component of pay. These figures are shown as averages over the period 2001-2005. This increasing pattern also exists with the median of executive pay. This preliminary result suggests a positive relationship between executive pay and organisational level.

Table 7-1: Summary of Executive Compensation by Organizational Levels

Variables	*Mean*			*Median*		
	CEO	*Level 2 Executive*	*Level 3 Executive*	*CEO*	*Level 2 Executive*	*Level 3 Executive*
Salary (£'000)	545.64	326.99	239.68	500.00	300.00	217.71
Bonus (£'000)	393.21	202.17	106.03	238.00	116.5	59.00
Cash Pay (£'000)	999.83	562.60	367.76	771.00	464.00	301.00
Cost of Options (£'000)	392.93	204.89	94.85	113.24	69.26	0.00
Cost of LTIPs (£'000)	597.61	235.19	231.32	264.90	130.58	73.32
Cost of Incentives (£'000)	990.54	440.09	326.17	448.73	246.61	155.74
Total Cost Pay (£'000)	1,990.37	1,002.69	693.94	1,209.90	717.38	508.03
Options Value (£'000)	306.94	140.91	77.66	20.85	13.92	0.00
LTIPs Value (£'000)	313.35	127.56	97.56	47.86	0.00	0.00
Incentive Value (£'000)	620.29	268.46	175.23	215.93	118.66	65.62
Total Pay Value (£'000)	1,620.12	831.07	542.99	967.09	600.49	391.03
Observations	250	682	205	250	682	205

Moreover, the results contained in Table 7.1 offer supports for the tournament theory prediction that there is a convex relationship between executive pay and organisational level. In other words, the pay difference increases as one moves up the organisational hierarchy. For each of pay components, the percentage change from Level-2 executive's pay to Level-1 executive's (CEO's) pay is higher than the percentage change from Level 3 executive's pay to Level 2 executive's pay. For example, Table 7.1 illustrates that moving from a Level-2 executive position to the CEO position increases the average of total pay (value) by 95% (i.e. from £831,070 to £1,620,120), whilst moving from Level 3 category (lower executive) to Level 2 (higher executive) results in an increase in average total pay (value) of 53% (i.e. from £542,990 to £831,070).

This pattern of results is repeated across each of the components of pay and for both mean and median pay. For a summary of the pattern of results, the percentage changes in executive pay (selected components of pay) across organisational levels, see Table 7.2 below. The results in Table 7.2 illustrate that the premium for moving from Level 2 to Level 1 (CEO) is in the range 61-131 percent, while the premium for moving from Level 3 to Level 2 is always lower and in the range 35-81 percent. This means that the extra compensation is always higher in more senior positions. The results are consistent with those reported by Conyon *et al* (2001) and suggest a convex relationship between executive pay and organisational level.

Table 7-2: Percentage change of compensation between executive positions

Variables	*Mean*		*Median*	
	From Level 2 to CEO	*From Level 3 to Level 2*	*From Level 2 to CEO*	*From Level 3 to Level 2*
Cash pay	78%	53%	66%	54%
Cost of Incentives	125%	35%	82%	58%
Total cost pay	99%	44%	69%	41%
Incentives Value	131%	53%	82%	81%
Total Pay value	95%	53%	61%	54%

Table 7.3 presents the univariate statistics for the variables used in the forthcoming analysis, while the description of variables is presented in Table 7.4. Table 7.3 and Table 7.4 only describe those variables that have not been described earlier in Chapter 5. The summary statistics for log of pay (all pay components in cost and value) variables, performance variables and control variables have already been described in Chapter 5. As illustrated in Table 7.3, the coefficient of variation of executive team compensation is 0.4470 (for cost of pay) and 0.4398 (for value of pay), which indicates that the variation of pay in the executive team is around 44% of its average value or pay dispersion within executive directors is about 44%. The median dispersion of executive pay is approximately 42%. The average number of contestants, i.e. average number of non-CEO executive directors in the board, is 3.24, while the median of contestants is 3.

Table 7-3: Summary statistics of Variables

Variables	*Mean*	*SD*	*Median*	*Min*	*Max*	*N*
ΔLncashpay	0.6142	0.2780	0.6018	-0.0947	1.4345	250
ΔLnInctcost	0.7312	0.5427	0.6370	-1.4165	2.7608	203
ΔLnTotalcost	0.6304	0.3537	0.6299	-1.0093	2.4886	250
ΔLnInctval	0.7610	0.5654	0.6658	-1.4165	2.4162	174
ΔLnTotalval	0.6400	0.3197	0.6228	-0.1708	2.0048	250
CVcost	0.4470	0.1959	0.4197	0.0012	1.4683	250
CVvalue	0.4398	0.1870	0.4146	0.0012	1.2331	250
Lnaverpayc	13.6863	0.7125	13.6317	11.9867	16.3091	250
Lnaverpayv	13.5249	0.6770	13.4164	11.9867	15.8847	250
Contestants	3.24	1.52	3.00	1.00	7.00	250
Lncontestants	1.0451	0.5460	1.0986	0.00	1.9459	250

Table 7-4: Description of Variables

Variables	*Description*
ΔLncashpay	= Ln(CEO cash pay) – Ln(mean of non-CEO executive cash pay)
ΔLnInctcost	= Ln(CEO incentives cost) – Ln(mean of non-CEO executives' incentives cost)
ΔLnTotalcost	= Ln(CEO total cost pay) – Ln(mean of non-CEO executives' total cost pay)
ΔLnInctval	= Ln(CEO incentives value) – Ln(mean of non-CEO executives' incentives value)
ΔLnTotalval	= Ln(CEO total cost pay) – Ln(mean of non-CEO executives' total cost pay)
CVcost	= Coefficient of variation of executive team's total cost pay (=SE/Mean)
CVvalue	= Coefficient of variation of executive team's total pay value
Lnaverpayc	= Ln(Average total cost pay of executive team)
Lnaverpayv	= Ln(Average total pay value of executive team)
Contestants	= Number of non-CEO executive directors in the board of directors
Lncontestants	= Ln(Number of non-CEO executives)

7.3 Empirical Analyses

In this section, the results of the empirical analyses examining the hypotheses derived from tournament theory are presented. Each group of hypotheses is examined using the relevant model described in section 7.1

7.3.1 Hypotheses 7: A convex relationship between executive pay and organisational level

The first hypothesis examines the relationship between executive pay and organisational level. Specifically, tournament theory predicts a convex relationship between the level of executive pay and organisational level. As previously noted in Chapter 4, Lazear and Rosen (1981) suggest that the higher position in the management hierarchy is associated with the higher level of compensation. The empirical results presented in Chapter 6 have already provided evidence supporting this prediction. The coefficient on CEO dummy variables is positive and significant in all pay determination models suggesting that the CEO

position has significant effect on the level of compensation. Specifically, when an executive director becomes CEO his/her compensation increases by approximately 70%. In the model 7.1 above, the term β_2 is the average change in log compensation between Level-3 executive and Level-2 executive (Level-3 executive is the excluded category). The average change in log compensation between Level-2 executive and CEO (Level 1) is calculated as $(\beta_1 - \beta_2)$; because the term β_1 is the average change in log compensation between Level-3 executive and CEO. Hence, to be consistent with the tournament prediction that higher organisational position is associated with higher level of pay, we should observe $\beta_1 \geq 0$, $\beta_2 \geq 0$, and $(\beta_1 - \beta_2) \geq 0$.

Furthermore, the tournament theory predicts that there will be increasing compensation gap as individual moves up the hierarchical ladder (Conyon, et al., 2001; Lambert, et al., 1993; Main, et al., 1993; Rosen, 1986). It means a convex relationship between executive pay and organisational level. The univariate analysis, as presented in section 7.2, provides supports for this prediction since extra compensation weight is placed on the most senior executive position. In the model 7.1, for this function to be convex, we should further expect $(\beta_1 - \beta_2) \geq \beta_2$ (or $\beta_1 \geq 2\beta_2$) implying that the average change in log compensation (pay gap) between the Level-2 executive and the CEO is higher than the average change in log pay (pay gap) between the Level-3 executive and the Level-2 executive. This test procedure is outlined in Lambert *et al* (1993) and Conyon *et al* (2001).

The results of the empirical analysis of hypothesis 7, for a convex relationship between executive's cost of pay and organisational level, are presented in Table 7.5. This table presents the results of the analysis using three alternative measures of pay: Lncashpay (log of cash pay), Lninctcost (log of cost of incentive pay), and Lntpaycost (log of total pay at cost). As expected, the coefficients on the Level 1 (CEO) variable and Level 2 (higher executive) variable are positive and statistically significant in all compensation equations, except for the coefficients in the incentive pay regression. For the cash compensation

measure, the test confirms the convexity of pay-organisational level relationship. The difference between the coefficient on the Level 1 (CEO) and Level 2 (higher executive) is 0.4945 (i.e. $\beta_1 - \beta_2 = 0.8491 - 0.3546$), which is higher than the coefficient on the Level 2 at 0.3546 (i.e. β_2). It means that the gap of cash pay between CEO and higher executive (Level 2) is higher than the gap of cash pay between higher executive (Level 2) and lower executive (Level 3). Or in other words, extra cash compensation weight is placed on the most senior executive position (CEO position). Similarly, the results presented in Table 7.5 confirm convexity in the case of total pay measure. The coefficients on the Level 1 (CEO) and the Level 2 (Higher executive) are both positive and statistically significant. In addition, the coefficient on the Level 1 (at 1.014) is higher than two times the coefficient on the Level 2 ($2 \times 0.3453 = 0.6906$). The result suggests that the relationship between total cost of pay and organisational position is convex and the pay gap is increasing with the organisational level.

In the incentive pay model, however, the test of the convexity of pay-organisational level relationship has failed. The coefficient on the Level 1 (CEO) is positive and insignificant, while the coefficient on the Level 2 (higher executive) is negative and insignificant. The result implies that there is no evidence of a difference in the cost of incentive pay between executive positions. This result is inconsistent with the OLS regression results presented in Chapter 6 (Table 6.6), which suggests that being in the CEO position has a significant effect on the cost of incentive compensation. Hence, although higher-level executive does receive an incentive pay premium (according to the univariate analysis), the relationship between incentive pay and organisational level in this data set is not convex. This result is consistent with Conyon's et al (2001) findings that there is no convex relationship between incentive pay and organisational level.

Overall, the empirical results broadly support Hypothesis 7 for a convex relationship between executive pay and organisational level. The convexity of the pay-organisational level relationship is confirmed in both cash pay and total pay models. This result is

consistent with prior research (Conyon *et al*, 2001; Eriksson, 1999; Lambert *et al*, 1993; Main *et al*, 1993). Particularly, Conyon et al (2001) also found that the convexity of the pay – organisational level relationship exists in cash pay and total pay measures, while incentive pay measure is not convexly related to executive positions/levels. Hence, the tournament theory's prediction of a convex relationship between executive pay and organisational level is partially confirmed by the test results presented in Table 7.5. The test results are established by controlling for other firm characteristics (firm performance, firm size), individual contingencies (executive tenure, age), and the monitoring function contingencies (percentage of non-executive directors in the board, institutional ownership).

Table 7-5: Determinants of Executive Compensation – Cost to company

Independent Variables	Dependent Variables		
	Lncashpay	**Lninctcost**	**Lntotalcp**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Level 1: CEO position	**.8491***** (10.59)	.1591 (0.61)	**1.014***** (8.24)
Level 2: Higher executives	**.3546***** (5.20)	-.3022 (-1.42)	**.3453***** (3.29)
Shareholder Return	**.0405*** (1.72)	.0018 (0.03)	**.0597*** (1.65)
Log (Market Valuation)	**.1097***** (3.92)	**.3189***** (4.28)	**.2301***** (5.35)
Executive Tenure	**.0450***** (5.40)	**.0657***** (2.91)	**.0632***** (4.93)
Executive Age	**.0286***** (3.58)	**.0358*** (1.72)	.0068 (0.55)
Percentage of NEDs	.1803 (1.21)	**.9007**** (2.12)	.0769 (0.34)
Institutional Shareholdings	**-.1762*** (-1.64)	.1985 (0.67)	-.1826 (-1.11)
Const	**8.578***** (13.15)	**3.298*** (1.88)	**7.510***** (7.50)
F statistic	58.74***	17.78***	36.30***
Overall R^2	0.2995	0.3277	0.3560
Hausman Test	79.26***	33.31***	56.81***
Fixed or Random	Fixed	Fixed	Fixed
Observations (N)	1137	905	1137

Note: * $p<0.10$; ** $p<0.05$; *** $p<0.01$

With regard to the effect of firm characteristics on executive pay, the results show a weak relationship between firm performance and executive pay. The coefficient on shareholder returns variable is positive in all compensation models; however, its significance is only presented in cash pay and total pay measures at 10% level. It means that at 95% confidence level, the pay-performance relationship is not statistically significant. On the other hand, firm size still has a significant effect on executive pay level. The coefficient on

firm size is positive and significant in all compensation measures. The elasticity of executive compensation with respect to firm size is 0.23 (in total compensation model), which is higher than that reported in Chapter 6 (Table 6.1) at 0.15. This elasticity of pay on size implies that a 1% change in the market value of the firm, ceteris paribus, yields an increase of 0.23% in total executive pay (at cost).

In sum, the empirical results presented in Table 7.5 confirm the existence of a convex relationship between executive pay and organisational level, while control variables have similar effect on the level of executive pay as reported in Chapter 6. The forthcoming empirical analysis testing the effect of using cost of pay to company and value of pay to executive on the convex relationship between pay and organisational level is presented in Table 7.6. The natural logarithm of incentive pay value and total pay value are used as dependent variables. The results on cash pay measure presented in Table 7.6 are brought forward from Table 7.5 (because the value of cash pay is equal to its cost) for a comparison with the incentive value and the total pay value measures.

The empirical results presented in Table 7.6 also suggest a convex relationship between organisational level and executive total compensation value, while the incentive pay value measure is not convexly related to executive position. The convexity of cash pay-organisational level relationship is already confirmed in the previous section and carried forward. In the total pay value model, the coefficients on both the Level 1 (CEO) and Level 2 (higher executive) variable are positive and significant. In addition, the difference between the coefficient on the Level 1 and Level 2 is higher than the coefficient on the Level 2 alone (i.e. $[\beta_1 - \beta_2] = [0.9888 - 0.3824] = 0.6064 > 0.3824 = \beta_2$). This result suggests a convex relationship between the value of total compensation and executive position with the highest pay premium concentrates on the top organisational level (i.e. CEO position). In the incentive pay value model, the coefficient on the Level 1 (CEO) variable is positive and significant suggesting a difference in incentive pay value between the Level 3 (lower

executive) and the CEO. The coefficient on the Level 2 (higher executive) variable, however, is not significant implying that the incentive pay value received by a higher executive (Level 2) is not statistically different from that received by a lower executive (Level 3). Hence the test of a convex relationship between incentive pay value and organisational level fails. So, although the univariate analysis suggests that the CEO does receive an incentive pay premium, the relationship is not convex.

To examine the difference between using cost of pay and pay value as dependent variable, the Z-test is used. The Z-test is designed to test the difference between coefficients on the same variable in two regressions using two alternative measures of dependent variable. Clogg *et al* (1995) suggest the use of z-statistic to check the significance of the difference between coefficients in two regressions. Z is calculated as follows.

$$Z = \frac{\beta_{i1} - \beta_{i2}}{\sqrt{SE(\beta_{i1})^2 + SE(\beta_{i2})^2}}$$

where β_{i1} and β_{i2} are coefficients of the same explanatory variable in two regressions; SE(β_{i1}) and SE(β_{i2}) are standard errors. The critical value is 1.96 meaning that if z-value is greater than 1.96 or smaller than -1.96, the difference between coefficients in two regressions is statistically significant at 5% level.

Table 7-6: Determinants of Executive Compensation – Value to Executives

Independent Variables	Dependent Variables				
	Ln(Cash Pay)	Ln (Incentive)	Z-value (between cost & value models)	Ln(Total Pay)	Z-value (between cost & value models)
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)		Coefficient (*t*-statistic)	
Level 1: CEO position	**.8491*** ** (10.59)	**.7428** ** (2.16)	-1.35	**.9888*** ** (8.63)	0.15
Level 2: Higher executives	**.3546*** ** (5.20)	.3820 (1.34)	-1.93*	**.3824*** ** (3.92)	-0.26
Shareholder Return	**.0405*** (1.72)	**.1608** ** (1.98)	-1.55	**.1100*** ** (3.26)	-1.02
Log (Market Valuation)	**.1097*** ** (3.92)	.0859 (0.91)	1.94*	**.0898** ** (2.25)	2.39**
Executive Tenure	**.0450*** ** (5.40)	.0298 (1.09)	1.01	**.0581*** ** (4.88)	0.29
Executive Age	**.0286*** ** (3.58)	.0187 (0.75)	0.52	.0110 (0.96)	-0.25
Percentage of NEDs	.1803 (1.21)	.6094 (1.11)	0.42	.1452 (0.68)	-0.22
Institutional Shareholdings	**-.1762*** (-1.64)	-.3483 (-0.93)	1.14	**-.2609*** (-1.70)	0.35
Const	**8.578*** ** (13.15)	**8.742*** ** (4.01)		**10.13*** ** (10.87)	
F statistic	58.74***	4.39***		33.28***	
Overall R^2	0.2995	0.2157		0.2128	
Hausman Test	79.26***	30.95***		85.36***	
Fixed or Random	Fixed	Fixed		Fixed	
Observations (N)	1137	778		1137	

Note: * $p<0.10$; ** $p<0.05$; *** $p<0.01$

The empirical results presented in Table 7.6 is consistent with the findings in cost pay model and further support hypothesis 7 for a convex relationship between executive pay and organisational level. The convexity of the relationship seems to have greater magnitude in the cost-pay model. While the coefficient on the Level 2 (higher executive) is approximately the same in both cost-pay and pay-value model (β_2[cost-pay] = 0.3546; β_2[pay-value]= 0.3824); the difference between the coefficients on the Level 1 (CEO) and Level 2 (higher executive) in the cost-pay model (β_1 - β_2[cost-pay] = 1.014 - 0.3453 = 0.6687)

is slightly higher than that in the pay-value model (β_1 - β_2[pay-value] = 0.6064). However, the magnitude of the convexity of the pay-position relationship is not statistically different between cost-pay and pay-value models. The z-value for both coefficients on the Level 1 (CEO) and the Level 2 (higher executive) is not smaller than -1.96 or higher than 1.96; suggesting that the difference between the coefficients on the Level-1 and Level-2 variables in cost-pay model and pay-value model is not statistically significant at 5% level. Although the coefficient on the Level 1 (CEO) variable is positive and significant in incentive-value model, while it is insignificant in the cost-pay model; the z-value show there is no different effect of cost pay or pay value on the convexity of incentive pay-organisational level relationship. A significant z-value on the firm size coefficient in total pay value model suggests that the size elasticity of executive total pay is significantly higher when measured in cost (size elasticity of cost pay is 0.23) than when pay is measured in value (size elasticity of pay value is 0.09). Other coefficients' z-values are not statistically significant at 5% level.

In sum, the empirical results presented in Table 7.5 & Table 7.6 broadly support the tournament theory and hypothesis 7 for a convex relationship between executive pay and organisational level. The convexity of the pay-position relationship is confirmed in both cash pay model and total pay model (which is true for both cost of total pay and total pay value); while the incentive pay element is not convexly related to organisational level. The results, however, do not support hypothesis H2 for a different effect of cost-pay measure and pay-value measure on the convex relationship between executive pay and organisational level.

7.3.2 Hypotheses 8: The positive relationship between pay gap and the number of contestants

The second hypothesis to be examined considers the effect of the number of contestants (competitors) on the tournament prize (pay gap). According to the tournament theory, the larger number of candidates competing for the CEO position; the greater disparity in pay (i.e. pay gap) between the CEO and other executives(Conyon, et al., 2001;

Eriksson, 1999; Lambert, et al., 1993; Main, et al., 1993; O'Reilly, et al., 1988). The results of the empirical analysis of hypothesis 9a that the tournament prize is affected by the number of contestants are presented in Table 7.7. As described in section 7.1, the tournament prize or pay gap is defined as the difference between CEO total pay and mean of other executives' total pay in natural logarithm form. There are three measures of the tournament prize: the log of CEO cash pay minus the log of mean cash pay of non-CEO executive team; the log of CEO incentive pay minus the log of mean incentive pay of non-CEO executive team; and the log of CEO total pay minus the log of mean total pay of non-CEO executive team. The number of contestants is defined as the number of non-CEO executive directors in the board, also in natural logarithm form. The log of firm size is used as control variable in the model.

Table 7-7: The effect of tournament contestants on the tournament prize (Fixed-effects estimation results)

Independent Variables	Dependent Variables				
	Ln(CEO Cash Pay) minus Ln(Mean of other executive cash pay)	Ln(CEO Incentives) minus Ln(Mean of other executive incentive pay)		Ln(CEO total pay) minus Ln(Mean of other executive total pay)	
		Cost Pay	Pay Value	Cost Pay	Pay Value
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Ln (Number of directors in the executive team)	**.0787*** (1.81)	-.0469 (-0.34)	.0136 (0.08)	-.0521 (-0.77)	-.0153 (-0.29)
Ln (Market valuation)	.0163 (0.46)	-.1031 (-0.99)	-.1390 (-1.28)	-.0576 (-1.05)	-.0524 (-1.22)
Const	.1826 (0.24)	3.006 (1.32)	3.751 (1.58)	1.620 (1.63)	**1.780*** (1.93)
F statistic	6.85***	2.54***	3.01***	3.11***	5.40***
Overall R^2	0.0084	0.0577	0.0625	0.0392	0.0581
Observations (N)	250	203	174	250	250

Note: * $p<0.10$; ** $p<0.05$; *** $p<0.01$

The empirical results contained in Table 7.7 suggest that at 95% confidence level, there is no evidence of a relationship between the tournament prize (pay gap) and the number of contestants. In cash pay model, the coefficient on the log of executive numbers is positive and significant at 10% level supporting the tournament theory for a positive relationship between the numbers of executives and the disparity of cash compensation. This coefficient, however, is not statistically different from zero at 5% significance level. In all other models (except for incentive pay value model), the coefficient on the log of executive numbers is negative suggesting that the greater the number of executives competing for the CEO position, the smaller the difference between CEO pay (incentive pay and total pay) and that of other executives. However, this negative relationship is again insignificant statistically. The coefficient on the control variable (log of market valuation) is also insignificant in all models suggesting that although firm size plays an important role in determining the level of executive pay, it has no effect on the disparity of pay between executive positions.

Overall, the results of the empirical analysis presented in Table 7.7 do not support hypothesis 8 for a significant effect of the number of contestants on the tournament prize (or pay gap). The z-value for the variable of contestants numbers (which is -0.26 in the incentive pay model and -0.49 in the total pay model) also rejects hypothesis 2, although this test is meaningless provided that there is no significant effect of the number of contestants on pay gap. The overall R^2 is also very low in all regressions, suggesting that the independent variables (number of contestants and firm size) aggregately explain very small variation in the size of the tournament prize (specifically, it is 1% in cash pay model, 6% in incentive pay model, and about 4.5 % in total pay model). The rejection of hypothesis 8 is inconsistent with prior studies(Conyon, et al., 2001; Eriksson, 1999; Main, et al., 1993), who found evidence of a positive relationship between the size of the prize and the number of contestants.

The lack of a significant relationship between the tournament prize and the number of contestants does not imply the inconsistency with the tournament theory, as the measure of variable on contestants' number seems to be biased. The number of contestants is defined (in this analysis) as the number of non-CEO executive directors. This measure is consistent with prior research(Conyon, et al., 2001; Eriksson, 1999; Main, et al., 1993); which assumes that all the candidates competing for the CEO position are from inside the company (i.e. the executive team members). In practice, however, there is a pronounced trend toward filling the CEO position through external hires rather than through internal promotions. Murphy and Zabojnik (2004) summarize that while in the 1970's outside hires accounted for 15% of all CEO replacements, in the 1980's it was 17%, and in the 1990's more than 26% of CEOs were hired from the outside. It suggests that being a member of the executive team is becoming less important in being chosen for the CEO position. Hence the use of internal executive team to measure the number of contestants may undervalue the actual number of candidates competing for the CEO position. The inclusion of external candidates in the number of contestants, however, requires further investigations in the future.

7.3.3 Hypotheses 9: The positive relationship between pay dispersion and firm performance

The third hypothesis examines the economic efficiency of the tournament pay structure, particularly the effect of executive pay dispersion on firm performance. As discussed in Chapter 4, the tournament prize (i.e. pay gap or pay dispersion) is required to induce higher effort by executives (candidates), which should be reflected in higher subsequent outputs and firm performance. The results of the empirical analysis examining the effect of pay dispersion on firm performance are presented below in Table 7.8 (for cost of pay) and Table 7.9 (for value of pay). These tables present the results of the analysis using

four alternative measures of firm performance: shareholder returns (TSR), the Tobin's Q ratio (TobinQ), return on capital employed (ROCE) and earning per share (EPS).

Table 7-8: Tests of Effects of Pay Dispersion on Firm Performance – Cost to company (Fixed-effects estimation results)

Independent Variables	Dependent Variables			
	Shareholder Returns	**Tobin's Q**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Coefficient of Variation Executive Team's Pay	-.0015 (-0.01)	.5694 (0.69)	.9279 (1.34)	.0195 (0.00)
Ln (Average Total Pay of Executive directors)	**.1944** (2.38)	**-1.223** (-3.34)	.4081 (1.34)	-.6885 (-0.11)
Ln (Market valuation)	**.3906** (5.14)	**1.982** (5.82)	.0371 (0.13)	**30.56** (5.18)
Const	**-10.86** (-7.04)	**-23.65** (-3.42)	-6.733 (-1.17)	**-624.6** (-5.21)
F statistic	1.84***	8.58***	1.37*	6.86***
Overall R^2	0.004	0.013	0.002	0.008
Observations	250	250	250	250

Note: * $p<0.10$; ** $p<0.05$; *** $p<0.01$

The empirical results presented in Table 7.8 indicate that executive pay dispersion (in cost) do not have any effect on firm performance. The coefficient of variation of executive pay is positively related to firm performance except for the shareholder return measure, where the coefficient is negative. This result suggests that the dispersion of executive pay seems to improve performance of the firm measured in Tobin's Q, return on capital employed, and earning per share; while it seems to reduce shareholder return. The coefficient on pay dispersion variable, however, is not statistically different from zero in all performance regressions meaning that there is no evidence of such relationship between executive pay dispersion and firm performance. Hence the empirical test has rejected hypothesis 9 for an effect of pay dispersion on firm performance.

The sign and significance of the average pay variable, however, depend on the measures of performance used. The average pay of the executive team is positively and significantly related to the shareholder return (TSR); while it is negatively and significantly related to the Tobin's Q value. This result is consistent with that reported in Chapter 6 for the opposite effect of shareholder return and Tobin's Q on the level of executive pay. The average pay of executive team, however, has no significant effect on accounting performance of the firm, which is measured in ROCE and EPS.

With regard to the effect of firm size on performance, the coefficient on the firm size variable is positive and significant in all performance regressions except for the ROCE measure. The result suggests that the larger firm tends to have better performance. It may due to the fact that the size is measured in market valuation, a function of share price, and the share price is the market reflection of firm performance. Although all regressions are significant (F-test is significant); the overall fit of the models (overall R^2), however, is small suggesting that all these independent variables aggregately explain very little variation of the firm performance.

Table 7.9 presents the results of the empirical analysis examining the effect of pay dispersion (in value) on firm performance. Again, the results suggest that there is no evidence of a positive relationship between executive pay dispersion (in value) and performance of the firm. The coefficient on the pay dispersion variable (coefficient of variation of executive pay) is positive in three measures of performance (TSR, Tobin's Q, and ROCE), however, it is not statistically different from zero. The effect of average pay value on firm performance again depends on the measures of performance variable. The average pay value is positively and significantly related to shareholder returns, while it is negatively and significantly related to Tobin's Q. The average pay value, however, does not have significant effect on accounting performance (measured in ROCE and EPS). In line

with the results in cost pay model, firm size is a significant determinant of firm performance (except for ROCE measures). The overall fit of the models, however, are still very low.

Table 7-9: Tests of Effects of Pay Dispersion on Firm Performance – Value to Executives (Fixed-effects estimation results)

Independent Variables	Dependent Variables			
	Shareholder Returns	Tobin's Q	ROCE	EPS
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Coefficient of Variance Executive Team's Pay	.0354 (0.18)	.7723 (0.88)	.7337 (1.00)	-7.281 (-0.48)
Ln (Average Total Pay of Executive directors)	**.2609***** (3.30)	**-.9976***** (-2.75)	.2358 (0.78)	5.626 (0.91)
Ln (Market valuation)	**.3952***** (5.49)	**1.807***** (5.47)	.1261 (0.46)	**28.50***** (5.03)
Const	**-11.85***** (-7.55)	**-23.22***** (-3.22)	-6.151 (-1.03)	**-662.8***** (-5.37)
F statistic	1.99***	8.52***	1.33*	6.95***
Overall R^2	0.003	0.009	0.000	0.008
Observations (N)	250	250	250	250

Note: * $p<0.10$; ** $p<0.05$; *** $p<0.01$

To test hypothesis 2 for the effect of the measurement of executive pay (at cost to company and value to executive) on the pay dispersion-performance relationship, the z-values for the coefficients are calculated and presented in Table 7.10. As illustrated in Table 7.10, the z-values for all coefficients in all performance models are not statistically significant implying that there is no difference between the coefficients using cost pay or pay value as the measure of executive compensation. In other words, the use of cost pay or pay value does not change the insignificant effect of executive pay dispersion on firm performance. Hence, hypothesis 2 for an effect of pay measures on the relationship between pay dispersion and firm performance is rejected.

Table 7-10: Tests of the difference between coefficients in cost pay and total pay models

	Z-Values for difference between coefficients			
	Shareholder Returns	Tobin's Q	ROCE	EPS
Coefficient of Variance Executive Team's Pay	-0.14	-0.17	0.19	0.35
Ln (Average Total Pay of Executive directors)	-0.59	-0.44	0.40	-0.71
Ln (Market valuation)	-0.04	0.37	-0.23	0.25

Overall, the results of the examination of the effect of executive pay dispersion on firm performance presented in Table 7.8 and Table 7.9 suggest that there is no relationship between pay dispersion and firm performance. The coefficient on the pay dispersion variable is positive in most performance regressions implying that higher executive pay dispersion tends to induce more effort from executives and subsequently improve firm performance. This coefficient, however, is not statistically significant at 5% level indicating that executive pay dispersion does not have significant effect on firm performance. The empirical results also suggest that the use of cost pay or pay value does not alter the insignificant effect of pay dispersion on firm performance. The lack of a significant relationship between executive pay dispersion and firm performance is consistent with the results reported by Conyon et al (2001). Hence, the results offer little empirical support for the tournament theory's view of the economic efficiency of the tournament pay structures.

The lack of a significant relationship between pay dispersion and firm performance might indicate other tournament's view, which is discussed by Lazear (1995; 1989) that there may be incentive motives for firm to adopt a more compressed pay structure. In order to attract candidates to participate in a tournament, the spread (i.e. dispersion) of pay cannot be "too big"(Eriksson, 1999; Lazear, 1989). In addition, if the cooperation of the executives is essential for the success of the firm, rewarding them according to their individual

achievements may not be appropriate. Hence, the positive relationship between pay dispersion and firm performance may only exist in those firms for which the cooperation of executive team is less important, "hawkish" firms, in Lazear's terminology. Main et al (1993) and Eriksson (1999) did test the effect of wage compression using the measure of executive interdependence and its interaction with the pay dispersion variable. They, however, found little support for Lazear's view of the rationale for executive pay compression. In this analysis, the data on executive interdependence is not available and thus the effect of pay compression cannot be examined.

7.3.4 Hypotheses 10: Average pay and dispersion of pay among executive team

The fourth prediction of the tournament theory from Lazear (1989) is that the average pay of executive directors will be lower in company where there is reduced variance in compensation within executive team (i.e. a compressed pay structures).

Table 7-11: Tests of the Effects of Pay Dispersion on Average Executive Pay (Fixed effects estimation results)

	Ln (Average Total Cost Pay of Executive directors)		**Ln (Average Total Pay Value of Executive directors)**		**Z-Values**	
	Coefficient (*t*-statistic)		Coefficient (*t*-statistic)			
Coefficient of Variance Executive Team's Pay	**.5604***** (3.59)		**.6849***** (4.14)		-0.55	
Ln(CEO pay) minus Ln(mean of other executives' pay)		**.2695***** (3.47)		**.3155***** (3.08)		-0.36
Ln (Market valuation)	**.3899***** (6.49)	**.3863***** (6.43)	**.2942***** (4.80)	**.2812***** (4.52)	1.12	1.22
Const	**5.085***** (3.93)	**5.243***** (4.06)	**6.923***** (5.24)	**7.301***** (5.45)		
F test	25.67***	25.18***	18.03***	13.86***		
Overall R^2	0.6030	0.6061	0.5562	0.5573		
Observations (N)	250	250	250	250		

Note: * $p<0.10$; ** $p<0.05$; *** $p<0.01$

The results of the empirical analysis of hypothesis H10 are presented in Table 7.11. This table presents the results of the analysis using two alternative measures of pay dispersion as described in section 7.1; the coefficient of variation of executive team's compensation, and the difference between CEO total pay and mean of other executives' total pay. Total pay is measured both as its cost to company and its value to executives, which results in two measures of the dependent variable. As expected, both measures of executive pay dispersion are significantly and positively related to average pay of executive team. This result indicates that firms with higher variance in compensation will tend to pay their executives higher than firm with less pay variance. Or consistent with Lazear's prediction, the average pay of top executives would be lower in firms that have more compressed pay structures (i.e. executive pay is less dispersed). The significant relationship between pay dispersion and average result is also consistent with the findings reported by Main et al (1993) and Eriksson (1999). In economic term, the coefficient on the coefficient of variation variable is 0.56 and 0.68 in cost pay and pay value model respectively indicating that the empirical effect of a 1 SE (standard error) increase in the pay dispersion variable is of the magnitude 56% and 68% in average cost pay and average pay value, respectively. Overall, the results offer empirical supports for hypothesis 10 for a positive relationship between pay dispersion and average executive pay.

With regard to the control variable, the coefficient on the log of market valuation is positive and significant in all models again suggesting that firm size is a significant determinant of executive pay. The coefficient on the size variable is approximately 0.39 in cost pay model and 0.29 in pay value model, which also means that the elasticity of executive pay in cost and value with respect to firm size is 0.39 and 0.29 respectively. In economic term, 1% change in the market value of the firm, *ceteris paribus*, yields an increase of 0.39% in average total cost pay and 0.29% in average total pay value of executive directors.

The empirical results presented in Table 7.11, however, suggests that there is no difference between cost of pay to company and pay value to executive measures in examining the relationship between pay compression structure and average executive pay. As illustrated in Table 7.11, z-values for the difference between the pay dispersion coefficient in cost pay model and that in pay value model are not statistically significant for both measures of pay dispersion. Hence, hypothesis H10 for a different effect of cost pay and pay value measure on the relationship between compressed pay structure and average executive pay is rejected.

Generally, the results of the empirical analysis presented in this section support the tournament theory and Lazear's (1989) prediction that lower mean levels of executive pay are associated with reduced variance in compensation within the top executive team. Specifically, the coefficients on pay dispersion variables are positively and significantly related to the average pay of executive team for both cost pay and pay value models. The results, however, offer little support for the different effect of using cost pay or pay value on the relationship between compressed pay structure and average executive pay.

7.4 Conclusion

This chapter has empirically examined the tournament theory on shape of executive compensation level and other tournament predictions than the pay-organisational level relationship. A number of key findings have emerged from the analyses. Firstly, the key prediction of tournament models that the tournament prize (or pay gap) widens through the corporate hierarchy is verified. The level of executive pay is found to be positively and convexly related the organisational level in both total executive pay and cash pay models. Although the more senior executives do received higher incentive pay, the relationship between incentive pay and organisational level is not convex. The empirical results suggest

that moving from Level 2 executives to the CEO position is associated with approximately a 99% increase in cost of total pay and 95% increase in total pay value. This "tournament ratio" is higher than that reported by Conyon et al (2001), who suggest that along with pay level, the tournament ratio is also different between the UK and the US. Specifically, Conyon et al (2001) reported a 60% increase in total pay from Level-2 executive to CEO with data in the UK, while Main et al (1993) reported 140% higher pay for the CEOs in the US.

Hence, the empirical results provide some confirmatory evidence of a convex relationship between executive compensation and organisational level. This result is consistent with prior research(Conyon, et al., 2001; Eriksson, 1999; Lambert, et al., 1993; Main, et al., 1993). The convexity of the relationship between pay and levels in hierarchy implies the operation of tournaments based on relative performance. It may well be that executive pay is not likely to equal marginal product, the fact that executive pay is largely attached to job levels and relative performance. Eriksson (1999) argues that executive pay has little to do with the absolute performance of the CEO or other executives and that instead the increasing pay differences act as an incentive to provide greater effort and subsequently increase individual and organisational performance. This efficiency of the tournament models, however, is not confirmed in our subsequent test.

Secondly, the number of non-CEO executive directors, which represents the tournament contestants, appears to have no relationship with the tournament prize (or pay gap). This contrasts with the findings of Conyon et al (2001), Eriksson (1999), and Main et al (1993) who found the number of contestants to have a positive and significant effect on the size of the tournament prize. However, the lack of a significant effect of the number of contestants on the tournament prize may due to the biased measure of variable. As in line with prior research (Conyon, et al., 2001; Eriksson, 1999; Main, et al., 1993), this analysis employs the number of internal candidates (i.e. non-CEO executives) as the measure of

candidates for the CEO position. There, however, is growing trend to fill the CEO position through external hires rather than through internal promotions (Murphy and Zabojnik, 2004). Hence, using internal candidates only to measure the number of the tournament contestants may incorrectly reflect the relationship with the tournament prize. A possible future research is to account for the external candidates in examining the effect of the number of contestants on the tournament prize.

Thirdly, although increasing tournament prize (pay differences) is found to act as an incentive to provide greater effort from contestants (i.e. executives) and subsequently increase individual and organisational performance; the efficiency of the tournament pay structures that a wider pay dispersion enhances firm performance is not supported. In most performance measures, the coefficient on pay dispersion variable is positive suggesting that wider pay distributions imply higher equilibrium levels of effort and consequently higher firm performance. This coefficient, however, is not statistically different from zero indicating no such significant effect. This is consistent with the results reported by Conyon et al (2001), who also found an insignificant relationship between executive pay dispersion and performance of 100 leading UK companies. This result, however, contrasts with Main et al (1993) and Eriksson (1999) who reported a positive effect of pay variation on firm performance in the US and Denmark, respectively. The lack of a significant effect of pay variation on firm performance may suggest the opposite view that wider pay dispersion encourages non-cooperative behaviour in the executive team and decreases firm performance. Lazear (1989) argues that a comparatively compressed pay structure is more efficient since it reduces sabotage and promotes cooperation and teamwork. However, data on executive interdependence are not available to measure the cooperation of executive team and to examine Lazear's view of the rationale for executive pay compression. This might be a focus for future research.

Fourthly, an examination of the effect of pay dispersion on average executive pay found evidence consistent with the tournament theory that lower mean levels of executive pay are associated with reduced variance in compensation within the top executive team (Lazear, 1989). The coefficients on both pay dispersion variables (i.e. coefficient of variance of executive pay and the difference between CEO pay and other executive pay) is positively and significantly related to average total pay of executive team. The evidence of a significant association between pay dispersion and average executive pay is consistent with the results reported by Eriksson (1999) and Main et al (1993). Hence, the empirical results support the tournament theory's prediction that the average executive pay is lower in firms that have more compressed pay structures.

In addition, the analysis also examines the effect of using different measures of pay (i.e. between the cost of executive pay to company and its value to executive) on the empirical results testing the tournament predictions. The results are disappointing as there is no evidence of a difference between using cost pay or pay value to examine the predictions of the tournament theory. Hence, although the cost of executive pay is much higher than the its value to executive (as discussed in Chapter 5), the difference has no significant effect on the relationship between executive pay and organisational level or other predictions suggested by the tournament theory.

In sum, the empirical results in this chapter are largely support the implication of consistent with tournament theory in explaining the shape of executive compensation. The results suggest that pay is not likely to equal marginal product, it is largely attached to the organisational levels and the relative performance. The empirical results support Lazear and Rosen's (1981) comment that, even though the compensation of the top executives may well exceed all measures of their marginal product, it can still be economically efficient. The results also imply the significant effect of compressed pay structure on average executive pay, although the efficiency of the tournament pay structure is not supported.

Chapter 8
CONCLUSION

8.0 Introduction

As stated in Chapter 1, the purpose of this thesis was to review and empirically analyze the determination of executive pay components, incentive pay ratio, and tournament pay structures. This final chapter summarizes the research's main contributions and presents conclusions to be drawn from the theoretical review and empirical analysis of the determinants of executive pay components, incentive pay ratios, and the implication of tournament pay structures. As well as summarizing the conclusions of the previous chapters, this chapter assesses the implication of research findings to practice and policy. This chapter also highlights the limitations of the study and opportunities for future research on executive compensation.

This chapter is structured as follows. Section 8.1 presents an overview and restatement of the research contribution to academic and practical knowledge. Section 8.2 outlines the conclusions derived from the meta-analysis on pay-performance relationship and review of literature on other determinants of executive compensation. Section 8.3 evaluates the findings of the empirical analysis of the determinants of executive pay components and long-term incentive pay ratios. Section 8.4 assesses the implications of tournament theory in the context of executive compensation. Recommendations for practice and policy are presented in section 8.5, whilst limitations and possible future research are presented in section 8.6.

8.1 Research and Conceptual Contribution

This section reflects conceptual contributions of this research. This study has provided a systematic review of pay-performance literature using meta-analysis. The results suggest a true association between executive compensation and firm performance is positive. The economic significance of the relationship, however, is low with less than one percent of executive's pay rise is directly attributable to the improvement of firm performance. To answer the research question set out in Chapter 1 regarding the main determinants of executive pay components and incentive pay ratio in the UK, empirical tests have been carried out using a sample of 50 UK listed companies comprised in FTSE-350 index. The empirical results, as provided in Chapter 6, indicated that shareholder return significantly determines level of cash pay and total executive pay but not the level of incentive pay. This finding supports the managerial power argument for higher levels of cash pay and total pay rather than risky long-term incentive pay. The empirical results also suggest that shareholder return played an important role in determining the ratio of pay value to total executive pay.

Other than firm performance, firm size, executive tenure and executive position as CEO strongly determined the levels of executive pay components. Firm size has a significant effect on the level of pay components (cash pay, incentive pay and total pay) in most regressions. The result is consistent with the notion that larger firm tends to have larger compensation packages for their executives. This also supports the fact that the larger the firm, the more likely that a remuneration consultant is employed for consultancy on executive compensation package, and the more likely of an increase in pay package. The coefficient on the firm size variable is also positive and significant in the incentive-cost-ratio model, however, it is insignificant in incentive-value-ratio model. The finding indicates that although firm size determines both the level of pay components and the structure of cost pay (i.e. incentive pay ratios). It, however, fails to determine the value of pay components and

proportion of incentive value in total executive pay value. This indicates that although larger firms do grant their executives lager incentive pay and total compensation package, the actual value of such incentive and compensation package does not dependent on firm size.

Another contribution of this research is the comprehensive measurement of executive pay variables. Long-term incentives components including share options and long-term incentive plans are firstly estimated their cost to company using Black-Scholes valuation model. The value of such long-term incentives is then controlled for the estimation of allowable vesting percentage following performance conditions attached to the options and/or LTIPs. The descriptive analyses in Chapter 5 shows that the actual value of share options of the sample firms is approximately 80% of the cost of option using Black-Scholes valuation model. The value of long-term incentive plans is about 54% of its nominal value on the grant date. The ratio of LTIP's value over their cost of 54%, however, is much higher than the simple estimation by Conyon and Murphy (2000) and Conyon et al (2001) for a 20% of their face value.

A positive and significant coefficient of executive tenure implies that with longer tenure, executives tend to be granted higher compensation with a larger proportion of pay including incentive components. The average coefficient of 0.06 implies that for every extra year in tenure, executive directors are get paid approximately 6% higher, holding other variables constant. This is consistent with the managerial power theory, which argues that long tenure is associated with higher power to extract 'rent' to the detriment of shareholder interests. Executive tenure also positively determines the structure of executive pay (i.e. incentive pay ratio), which is consistent with the agency theory suggesting that executives with longer tenure tend to be more risk-neutral and accept a higher proportion of pay in long-term incentives for a higher return. The other individual variable, executive shareholdings strongly and negatively determines the ratio of incentive pay value indicating

that higher existing shareholding will prevent executives from accepting further incentive components in their compensation package.

Among variables representing the monitoring function, board size has a positive effect on the level of total pay (cost model) and is positively related with the proportion of long-term incentives to total executive pay. This finding is consistent with agency arguments that larger boards diminish the monitoring function and thus incentive contracts, a substitute mechanism, are preferred to align executive-shareholder interests. The presence and dominance of non-executive directors on the board is found to be negatively related to cash pay but positively related to incentive pay. Although this result does not support agency arguments that the presence of non-executive directors helps to increase monitoring, it is consistent with the notion that the dominance of non-executive directors helps to reduce the level of cash pay and increase the level of incentive pay, i.e. enhances the use of incentive contracts. Hence, non-executive directors may prefer to use alternative means, rather than the enforcement of monitoring, to align the interest of executives with those of shareholders.

In addition, the empirical results testing the implication of tournament theory suggest that executive pay is not likely to equal marginal product, rather it is largely attached to the organisational levels and the relative performance. The empirical results support Lazear and Rosen's (1981) comment that, even though the compensation of the top executives may well exceed all measures of their marginal product, it can still be economically efficient. The results also imply the significant effect of compressed pay structure on average executive pay, although the efficiency of the tournament pay structure is not supported.

8.2 Review of Meta-analysis of the pay-performance relationship

This study (as presented in Chapter 3) conducts a meta-analysis of the pay-performance relationship from prior empirical results to provide a systematic review of literature and determine the true relationship between executive pay and firm performance. From 43 prior empirical studies, which reported 68 pay-performance correlation coefficients, the meta-analytic result indicates that the true association between executive compensation and firm performance is positive (which is consistent with agency theory's argument). However, the correlation coefficient between executive pay and firm performance is low, at 0.07 meaning that less than one percent of executive's pay rise is directly attributable to the improvement in firm performance. This result indicates that the economic significance of the pay-performance relationship is very small, which is consistent with the findings reported by Jensen and Murphy (1990) and Conyon and Murphy (2000).

In addition, the meta-analytic results suggest that the pay-performance relationship is stronger (i.e. higher correlation coefficient) when executive compensation is measure in total compensation rather than cash compensation. It means that the inclusion of long-term incentive pay helps to increase the strength of the pay-performance relationship, which is consistent with agency theory's view. Specifically, the correlation coefficient between total executive pay and firm performance is 0.117, which is much higher than 0.055 correlation coefficient of the cash pay-performance relationship. This view, however, is not supported by the empirical results presented in Chapter 6 that performance does not strongly determine incentive pay components. Although performance does not strongly determine incentive components, it does have significant influence on the incentive pay ratio or pay structure.

Also reported in the meta-analysis, there is strong correlation between executive pay and firm size. The pay-size relationship is positive and statistically significant with the correlation coefficient of 0.22. It means that the pay-size elasticity is 0.22 or a 10% increase in firm size results in 2.2% increase in executive pay. This result is consistent with prior research, for example Baker et al (1988) document that the elasticity of executive pay with respect to firm size is about 0.30. The result suggests that firm size is still a significant determinant of the level of executive compensation despite the explanatory power of firm size has declined over time (Jensen and Murphy, 1990). The strong pay-size correlation and a weak relationship between executive pay and firm performance reported earlier suggest that agency theory alone might not fully explain the determination of executive compensation.

As reviewed in Chapter 3, there are many theoretical perspectives, other than agency theory, that try to explain the determinants of the level of executive compensation. The managerial power perspective argues that executives use their power to extract rents and shape their own compensation package (Bebchuk and Fried, 2004). Tournament theory, on the other hand, suggests that the relative performance and rank order in the organizational hierarchy are main determinants of executive pay level (Lazear and Rosen, 1981a). As discussed in Chapter 3 and Chapter 4, a combination of these three main perspectives: agency theory, the managerial power theory and tournament theory provide a better explanation of executive pay determination. A summary of results of the empirical analyses examining (1) the determination of executive pay components and incentive pay ratio from the view of agency theory and the managerial power theory (Chapter 6); and (2) the implication of tournament pay structures (Chapter 7) are presented in the next sections.

8.3 Review of the Empirical Analyses of the Determinants of Executive Pay Components and Incentive Pay ratios.

Chapter 6 has empirically examined the determination of executive pay components (total compensation, cash compensation, and long-term incentives) and the determination of incentive pay ratios. A number of key findings have emerged from these analyses and are summarized below.

8.3.1 Determinants of the level of executive pay components

First, there is evidence of a statistically significant relationship between firm performance and the level of executive compensation and its components. The sign and significance of the relationship, however, are dependent on the performance measures. When shareholder return is used, the pay-performance relationship is positive and significant suggesting that shareholder returns variable is a significant determinant of the level of executive pay (cash pay and total pay). Shareholder returns also positively determine the actual value of long-term incentives paid to executive directors, although it has no effect on the cost of those incentives to the company. Firm performance in Tobin's Q, other market-based measure, however, is negatively associated with the level of executive pay (long-term incentives and total pay). This conflict result between using shareholder returns and Tobin's Q as alternative measures of market performance may due to the nature of measurement. Tobin's Q is an equilibrium measure (i.e. market value of fund divided by book value of fund), whereas TSR reflects adjustment over time, especially to new performance-relevant information; hence it is unsurprising that empirical work using them as alternative measures may appear to give inconsistent results. Between the two measures, shareholder returns measure is more informative and more significant economically. The average coefficient of TSR variables is about 0.20 meaning that a 10% increase in total shareholder returns, *ceteris paribus*, results in 2% increase in the value of executive compensation; whilst the average

coefficient of Tobin's Q variable is (-0.02), ten times smaller than that of TSR variables. Moreover, when taking the first difference (i.e. in GMM models), there is no evidence of a relationship between Tobin's Q variable and executive pay level. It may be because of the fact that the Tobin's Q measure suffers from skewness in the data set due to the inclusion of growth firms (which expect very high Tobin's Q ratio).

The empirical results in Chapter 6 also indicate that accounting firm performance measured in ROCE (return on capital employed) is positively related to the level of executive pay, although the magnitude of the relationship (i.e. the economic significance) is relatively small (0.3% increase in executive's total pay and 0.6% increase in incentive pay for every 10% increase in ROCE). This is consistent with the findings of Jensen and Murphy (1990) and Conyon and Murphy (2000) for a low economic significance of the pay-performance relationship. Whilst accounting rate of return measured in ROCE relates to incentive pay component and total pay, absolute accounting performance measured in EPS only affects the level of cash compensation. The sensitivity of the results between performance measures suggests that the pay-performance relationship should be interpreted with care basing on the performance measures used.

Generally, the empirical results provide supports for the agency theory and a positive relationship between pay level and firm performance. The positive and significant relationship between executive pay and shareholder returns (performance measure that best represents shareholders' interests in all four measures) indicates the effectiveness of an incentive contract and alignment of shareholders' and executives' interests according to the agency theory. Although both shareholder returns (TSR) and accounting return (ROCE) significantly determines the value of incentives paid to executive directors, the cost of incentives granted is only determined by accounting performance (ROCE), not market performance (shareholder return). This result supports hypothesis H2 derived from the managerial power theory that incentive pay is positively related to accounting performance

rather than market performance. It suggests that powerful executives are likely to extract 'rents' and 'camouflage' their extractions of rents through the adoption of inefficient compensation structures that the incentive pay component tends to subject to easy and more controllable performance hurdles (such as accounting performance rather than volatile shareholder returns). The implication of the managerial power theory, however, only holds in term of cost of incentives granted by company; whilst the value of incentives is still determined by both shareholder return and ROCE as suggested by agency theory.

Secondly, there is strong evidence of a significant effect of firm size on the level of executive compensation and pay components, which is consistent with the notion of the managerial power theory. Firm size, which is measured in log form of market valuation, is a significant determinant of the level of executive pay with the size elasticity of executive pay ranging from the low of 0.15 in cash pay models to 0.40 in cost-of-incentive models. This result suggests that larger firms tend to grant their executives higher compensation than do smaller firms (with higher level of cash pay and even higher level of long-term incentive pay). The strong pay-size relationship results are consistent with prior empirical studies (see Cosh and Hughes, 1997; Ciscel and Carroll, 1980; Lewellen and Huntsman, 1970; McGuire, 1968; etc.) for significant pay determination of firm size. The empirical results, however, suggest that although firm size is a significant determinant of the cost of incentives granted, the actual value of incentive pay received by executives is not determined by firm size. This again indicates that the implication of the managerial power theory for a significant pay determination of firm size is more likely to the cost of pay rather than the value of pay.

Thirdly, with regard to the effect of individual contingencies (share ownership, tenure, and age) on level of pay, executive tenure is found to have positive and consistently strong effect on the level of executive pay and pay components. Specifically, for every extra year in tenure, executives are paid approximately 6% higher compensation, ceteris paribus. This result supports the notion of the managerial power theory that longer tenure increases

executives' power and allow them to extract greater 'rents'. Despite the same derivation from the managerial power theory, executive age only determines the level of cash pay while there is no connection between executives' age and level of incentive pay or total pay. The empirical results presented in Chapter 6 also suggest that executive share ownership, another individual contingency, has no effect on the level of executive pay and pay components. It neither supports the agency theory for a negative relationship between executive shareholdings and level of pay components nor the managerial power theory for a positive relationship.

Fourthly, the empirical tests examining the monitoring function of the board and the effect of institutional shareholders indicate weak results. Although there is evidence of a weak monitoring role of institutional shareholder, the board of directors plays no direct role in monitoring the level of executive compensation. The level of shareholdings of institutional shareholders is found to have a negative effect on the level of cash pay and the value of total executive pay, which supports with both the agency theory and the managerial power theory for a direct monitoring function of institutional shareholders. Institutional shareholders, however, have no monitoring effect on the level of incentive pay. The empirical results in Chapter 6 also indicate that board of directors does not have direct monitoring on the level of executive pay (i.e. a negative relationship between board monitoring proxies and level of executive pay). The empirical results, however, show that the proportion of non-executive directors on the board is positively related to the level of incentive pay, which means that the presence and dominance of non-executive directors in the board does not help to reduce the level of executive pay but rather increase the use of incentive contract. The results reject the hypothesis derived from the agency theory for a direct monitoring function of the board; and support the managerial power theory for an invisible connection between independent directors and powerful executives to influence inefficiently executives' pay package.

Finally, evidence was also found to suggest that the position of executive directors in the management team plays an important role in determining the level of executive pay and pay components. Specifically, the results indicate that when an executive director becomes chief executive officer (CEO), his/her total compensation increases by 73%. This result is consistent with the prediction of tournament theory that rank-order in the organizational hierarchy is the main determinant of the level of executive compensation. Further examinations of the tournament theory's predictions were presented in Chapter 7 and will be summarized in later section.

Hence, the results of the analysis carried out in Chapter 6 suggest that the main determinants of the level of executive pay and pay components are firm performance, firm size, executive tenure and the CEO position. The significance of the pay-performance relationship, however, depends on performance measures used; and consistent with prior research, the economic significance of the relationship is quite low. Whilst firm size, executive tenure and the CEO position dummy have consistently significant effect on the level of executive pay and pay components. The results support predictions of different theoretical perspectives: agency theory, the managerial power theory, and tournament theory. The overall fit of the empirical models is approximately 30%, implying that the combined models from different perspectives explain about 30% of the variance in the level of executive pay and its components.

8.3.2 Determinants of incentive pay ratios

The empirical tests examining the determinants of incentive pay ratios firstly indicates that firm performance is also a determinant of the ratio of long-term incentive pay, although the sign and significance of the relationship are, again, sensitive to performance measures used. Shareholder returns and ROCE are positively and significantly related to the incentive pay ratios supporting hypothesis H3, which follows the predictions of both agency

theory and the managerial power theory for a positive relationship between incentive pay ratio and firm performance. It means that following good performance, executives are rewarded higher pay in term of long-term incentives, rather than cash pay. The empirical evidence suggests that a 10% increase in shareholder returns results in 0.5% increase in incentive pay ratio. Firm performance measured in Tobin's Q, however, indicates a negative association with incentive pay ratio, although its economic significance is relatively small. Whilst absolute accounting performance, EPS, has no correlation with the ratio of long-term incentive pay. The sensitivity of the results to performance measures used, again, suggests that the pay-performance relationship should be interpreted carefully with different measure of firm performance.

Secondly, firm size is a significant determinant of the incentive pay ratio in cost to company suggesting that in bigger firms, executive directors tend to be granted larger proportion of long-term incentives in their compensation package. It supports the managerial power's argument that in larger firm, executives try to 'camouflage' their extraction of rents through using more long-term incentives rather than observable pay in order to avoid the 'outrage'. It is also consistent with the notion that large firms, who pay their executives much higher than small firms, try to ease public criticism by reducing the level of cash pay and increasing long-term incentives for the same (high) total compensation paid to executives. However, the connection between firm size and incentive pay ratios only holds when incentives are measured at cost to company; the ratio of net incentives received by executive directors have no significant correlations with firm size. This result supports the argument of agency theory that the proportion of long-term incentives in total pay is not expected to rise in line with firm size.

Thirdly, executive tenure is again a significant determinant of the incentive pay ratios. The positive and significant relationship between tenure and incentive pay ratios suggests that the longer tenure in the position, executives receive the larger proportion of

their pay in long-term incentives. This is consistent with agency theory's argument for a positive relationship between executive tenure and incentive pay ratios. In economic term, one extra year in tenure, ceteris paribus, executives' incentive pay ratio increases by 1.3% on average. Despite having the same derivation, executive age is negatively and weakly related to the proportion of long-term incentives, which is not consistent with the notion that by time (age), executives become more risk-neutral and willing to accept a highly incentive compensation contract.

Fourthly, there is the negative and significant relationship between the level of executives' current shareholdings and the incentive pay ratios. This result indicates that the more company's shares owned by the executives, the less likely they accept pay package with higher proportion of long-term incentives (mostly in term of share options or conditional shares). This is consistent with agency argument (Hypothesis H9a) that higher existing shareholdings prevent executives from accepting further risk bearing by highly incentive pay contract. The empirical results also indicate that there is a positive and significant association between board size and incentive pay ratio implying that the larger the number of members on the board of directors, the higher use of incentive contract offered to executives. This is in line with agency theory, which argues that when the size of the board is getting large, the monitoring function is diminishing and incentive contract is necessary to align the interests of executives with those of shareholders.

In sum, the empirical tests examining the determinants of the level of executive pay components and incentive pay ratios have suggested different determinants and support both agency theory and the managerial power theory. Broadly, the main determinants of executive pay components are firm performance, firm size, executive tenure and the CEO position; whilst incentive pay ratios are mainly determined by performance, size, tenure, executive ownership and the CEO position. Provided the contrast between agency theory and the managerial power theory in determining pay level and pay ratios, the empirical

results do not strongly support one particular theory. It looks like that the combination of the two theories, in line with tournament theory, gives clearer determinants of executive pay components and incentive pay ratios. The empirical results in Chapter 6 also indicate that the CEO position is positively and significantly related with both pay components and incentive pay ratios. This implies that the organisational levels play an important role in determining the level of executive pay and incentive pay ratios as predicted by tournament theory. An examination of the tournament theory's predictions was presented in Chapter 7 and is summarized in the following section.

8.4 Review of the Empirical Analyses of the Implication of Tournament Pay Structures.

As previously discussed, the CEO position strongly determines the level executive pay components and incentive pay ratios. The descriptive analysis in Chapter 7 illustrates the pattern and percentage change in executive pay across organisational positions and suggests that the level of pay is clearly different between executive positions. Moreover, the descriptive analysis indicates a convex relationship between executive pay and organisational levels with the pay difference increases as one moves up the organisational hierarchy. Specifically, moving from Level 3 executive position to Level 2 position results in an increase of 53% in total pay; whilst moving from Level 2 executive position to the CEO position increases the average of total pay by 95%. The subsequent empirical tests confirm the convex and positive relationship between executive pay and organisational level; implying that extra compensation weight is placed on the most senior executive position. The convexity of the pay-position relationship is confirmed for both cash pay and total pay; whilst incentive pay is not convexly related to executive position.

The empirical evidence of a convex relationship between the level of executive pay and organisational level is consistent with prior research by Conyon et al (2001), Eriksson

(1999), Lambert et al (1993), and Main et al (1993). Particularly, Conyon et al (2001) using UK data also found that the convexity of the pay-position relationship exists in cash pay and total pay measures, whilst incentive pay measure is not convexly related to organisational levels. The pay gap in this study (95% higher CEO's pay than the next level's), however, is higher than that reported by Conyon et al (2001), which used 1997 financial year data (60% between CEO's pay and level 2 position's pay). Despite the sampling differences, this result broadly indicates that the pay gap in the UK companies between 2001 and 2005 has increased sharply comparing to the pay gap in 1997. In other words, the convexity between executive pay and organisational level becomes steeper over time. The pay-gap reported in this study, however, is much lower than that reported by Main et al (1993) for the US data (140% higher CEO's pay than the next level's). This means that the magnitude of the convexity of the pay-position relationship in the UK is smaller than that in the US. This is because the US executives are sometimes paid very highly. Conyon and Murphy (2000) provide a comparison of differences in CEO pay and incentives in the US and the UK for the fiscal year 1997 and show that CEOs in the US earn 46% higher cash compensation and 190% higher total compensation, after controlling for size, sector and other firm and executive characteristics.

The second prediction of tournament theory considers the effect of the number of contestants on the tournament prize (pay gap). The empirical results in Chapter 7, however, suggest that there is not enough evidence of such effect. This result is inconsistent with prior tournament testing conducted by Conyon et al (2001), Eriksson (1999), and Main et al (1993) who found evidence of a positive and significant effect of the number of contestants on the size of the tournament prize. However, the lack of a significant effect of the number of contestants on the tournament prize may due to the biased measure of this variable. In line with prior research (Conyon, et al., 2001; Eriksson, 1999; Main, et al., 1993), this analysis employs the number of internal candidates (i.e. non-CEO executives) as the measure of candidates for the CEO position. There, however, is growing trend to fill the CEO position

through external hires rather than through internal promotions (Murphy and Zabojnik, 2004). Hence, using internal candidates only to measure the number of the tournament contestants may incorrectly reflect the relationship with the tournament prize. In this study, it is unable to collect data accounting for the external candidates to properly examine the effect of the number of contestants on the tournament prize.

Thirdly, tournament theory's prediction about the efficiency of the tournament pay structures that increasing tournament prize (pay dispersion) enhances firm performance is not supported by the empirical results. In most performance measures, the coefficient on pay dispersion variable is positive suggesting that wider pay distribution implies higher equilibrium level of effort and consequently higher firm performance. This coefficient, however, is not statistically different from zero indicating no such significant effect. This result is consistent with that reported by Conyon et al (2001), who also found an insignificant relationship between executive pay dispersion and performance of 100 leading UK companies. This result, however, contrasts with Main et al (1993) and Eriksson (1999) who reported a positive effect of pay variation on firm performance in the US and Denmark, respectively. The lack of a significant effect of pay variation on firm performance may suggest the opposite view that wider pay dispersion encourages non-cooperative behaviour in the executive team and decreases firm performance. Lazear (1989) argues that a comparatively compressed pay structure is more efficient since it reduces sabotage and promotes cooperation and teamwork. However, data on executive interdependence are not available to measure the cooperation of executive team and to examine Lazear's view of the rationale for executive pay compression. This might be a focus for future research.

Fourthly, an examination of the effect of pay dispersion on average executive pay found evidence consistent with the tournament theory that lower mean levels of executive pay are associated with reduced variance in compensation within the top executive team (Lazear, 1989). The coefficients on both pay dispersion variables (i.e. coefficient of variance

of executive pay and the difference between CEO pay and other executive pay) are positively and significantly related to the average total pay of executive team. The evidence of a significant effect of pay dispersion on average executive pay is consistent with the results reported by Eriksson (1999) and Main et al (1993). Hence, the empirical results support tournament theory's prediction that the average executive pay is lower in firms that have more compressed pay structures.

In sum, the empirical tests examining the predictions of tournament theory broadly support a tournament pay structure in the UK companies. The key prediction of tournament theory that the tournament prize widens through the corporate hierarchy is verified. The empirical results also suggest that pay gap between organisational levels is increasing over time (convexity of the pay-position relationship becomes steeper). In term of other tournament's predictions, only the effect of pay dispersion on average pay is confirmed by the empirical results, whilst predictions about the effect of the number of contestants and the efficiency of the tournament pay structure are not verified.

8.5 Implications and Recommendations to Practice and Policy

The level and determinants of executive compensation has been a major topic of public concerns and addressed in a number of governance reports. The main concerns are highly pay level and the board captured by executives in the matter of pay setting (Bebchuk and Fried, 2004). This study has found evidence of a positive relationship between the level of pay (and its components) and performance (shareholder returns and ROCE) in support of agency theory. There is evidence that powerful executives are likely to extract rents and 'camouflage' their extraction of rents through adoption of inefficient pay structures. This implication of the managerial power theory, however, only holds in term of cost of incentive pay granted by company, whilst the actual value of pay received by executives is strongly

determined by performance. Therefore, shareholders and other stakeholders may be satisfied that executive pay has indeed been earned through firm performance. This result contradicts the claim that executive compensation contracts are widely inefficient due to the lack of association between pay and performance.

However, the economic significance of the pay-performance relationship is found to be relatively low, which is consistent with the findings of Jensen and Murphy (1990), Conyon (1995), and Murphy (2000). This weak association may provide some entrenched executives with opportunities to exploit the pay-performance relationship; and hence performance-related pay schemes may not deliver expected results. In order to prevent this potential abuse, it is recommended that current and future pay schemes (especially long-term incentives) are continually monitored and revised in the light of this possibility. The evidence of rent extraction by powerful executives by adopting inefficient pay structures suggests that incentive pay schemes should be monitored to ensure they are conditional to shareholder-value-based performance measures rather than those easily manipulated by executives. In effect, it helps to reduce the cost of company in granting such inefficient incentive pay schemes and align the interests of executives with those of shareholders.

The empirical results in this study suggest that the pay-performance relationship is sensitive to performance measures used. While shareholder returns measure strongly determines the level of executive pay, other measures including Tobin's Q, ROCE and EPS are weakly related to pay level. It is then recommended that executive incentive pay schemes should be made conditional to market-based measures rather than accounting based measures. Specifically, there is no evidence of an association between pay level and EPS; hence companies should reconsider when granting long-term incentives conditional on EPS as found in the sample data.

This study found that executive tenure is a strong determinant of both level of executive pay and incentive pay ratio. This supports the notion of the managerial power theory that longer tenure increases executive's power and allow them to extract greater rents. Despite the fact that tenure results in additional human capital, experience, etc.; an increase of approximately 6% in pay for every extra year in tenure seems overpaying for such additional human capitals. Hence, it is recommended that shareholders, institutional investors and regulators should pay more attention to tenure issues and have proper control procedures to ensure executives do not gain such power through tenure to extract rents at the cost of shareholders.

The monitoring function of the board and the effect of institutional shareholders have been found mostly insignificant in this study. Hence, it could be concluded that the effort of regulators, institutional investors and shareholders in strengthening corporate governance in companies to monitor executive directors and the pay-setting processes may not be fruitful. The monitoring function of the board and institutional shareholders has mostly no effect on the level of executive pay or incentive pay ratio. However, the application of strong corporate governance may at least influence the pay-setting process and strengthening the monitoring function as one way to limit the power of executives.

This study also suggests that executive pay in UK companies highly follows tournament pay structure with a strong connection between executive pay and organizational level. Although there is evidence of increasing 'tournament ratio' over time, the efficiency of these tournament pay structures is not verified by this empirical study. Hence, it is suggested that the adoption of tournament pay process might not help to lower levels of pay and 'tournament ratios'. Its efficiency is also questionable.

8.6 Limitations and Suggestions for future research

While the empirical analysis of the determinants of executive pay components, incentive pay ratios, and the implication of tournament pay structure has produced some informative results, it is clear that there is a number of potential limitations and a great deal of research to be carried out on these issues. In this sub-section, a number of the most important issues are outlined.

Firstly, due to time-consuming manual data collection, this study did empirical tests on a sample of 50 UK companies in 5-year time frame. Although the sample is proved to be representative, it would be more accurate in the results if sample size can be expanded. Hence, it is recommended that future research extends the sample size to full FTSE 350 companies (excluding financial sector) and expands the panel to, say, 10 years.

Also relating to the data and research design, this thesis focuses on executive compensation package with definition of total remuneration package excludes pension schemes. According to a survey[18], pension schemes now account for about 10% of actual total remuneration package of FTSE 100 CEO. Hence, missing out pension schemes in examining the determination of executive pay might mislead the results. The pension schemes, however, are very complicated and difficult to account for accrately

Thirdly, consistent with much of the research on executive pay, access to main board executive directors is difficult if not impossible. Nevertheless, a valuable contribution to executive remuneration would be to examine how executives perceive themselves to be motivated through remuneration. This may be achieved through interviews or

[18] Source: PWC's "Executive compensation review of the year 2009"

psychological/motivational surveys. Again, access will be the single most important factor that will hamper this research endeavour.

Fourthly, although this study does, to some extent, compare UK findings with American data, another valuable area for comparison is with Europe e.g. Germany or across regions. The institutional, cultural and regulatory norms surrounding executive remuneration are very different across the economic triad: Europe, America, and Austral-Asia. American executives and American companies tended to have significantly higher bonus payments, which suggest country variations exist. Therefore, direct international comparisons may create opportunities for countries to learn from the successes and/or failures of alternative remuneration practices and policies. Equally, it may create a better understanding of the role the institution and company play in constructing remuneration packages, the cultural differences, and international effects.

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APPENDICES

Appendix 1: Meta-analysis Sample and related statistics

Study	*Sample Size*	*Compensation Measure*	*Performance/size measure*	*Average Correlations*
McQuire, Chiu & Elbing (1962)	45 45	Total Comp Δ Total Comp	Sales, Profit ΔSales, ΔProfit	0.580 0.305
Lewellen (1968)	45 45 45	Cash Comp Total Comp Δ Total Comp	Sales, Total Assets, Market Valuation, Profit ΔSales, ΔProfit	0.569 0.493 0.362
Ciscel (1974)	210	Cash Comp	Sales, Total Assets, Profit	0.364
Miller (1985)	5312	Δ Cash Comp	Sales	0.020
Gomez-Mejia, Tosi & Hinkin (1987)	71 71 71 71 71 71	Salary Bonus Long-term Income Δ Salary Δ Bonus Δ Long-term income	Sales, Market Valuation, Profit, Shareholder return Profit Shareholder return ΔProfit	0.270 0.210 0.308 0.183 0.223 0.210
Miller (1988)	5312	Δ Cash Comp	Profit, ROE	0.020
O'Reilly, Main & Crystal (1988)	105	Cash Comp	Sales, Total Assets, ROE	0.367
Finkelstein & Hambrick (1989)	110	Log (Cash Comp)	Log(total assets), ROE	0.395
Fizel, Louie & Mentzer (1990)	136	Cash Comp	Sales	0.550
Rajagopalan & Prescott (1990)	226	Cash Comp	Total Assets, ROE	0.305
Winfrey (1990)	215	Cash Comp	Sales, ΔSales, Total Assets, ROE	0.343
Kerr & Kren (1992)	63 63	Δ Cash Comp Δ Total Comp	Shareholder return Shareholder return	0.230 0.100
Belkauoi & Pavlik (1993)	216	Cash Comp	Total Assets	0.264
Belkauoi & Picur (1993)	247	Cash Comp	Market Valuation, Profit	0.121
Mangel & Singh (1993)	79	Log (Cash Comp)	Log (Sales), ROE	0.320
Boyd (1994)	193	Log (Total Comp)	Log (Sales), ROE	0.407

Appendix 1: Meta-analysis Sample and related statistics (Continued)

Study	*Sample Size*	*Compensation Measure*	*Performance and size measure*	*Average Correlations*
Wener & Tosi (1995)	300	Cash Comp	Sales, Total Assets, ROA, ROE	0.367
	238	Δ Cash Comp	ΔSales	0.019
Henderson & Fredrickson (1996)	189	Cash Comp	Sales	0.220
	189	Total Comp	Sales	0.190
Bilimoria (1997)	262	Log (Total Comp)	Log (Sales)	0.367
Gray & Cannella (1997)	750	Total Comp	Log (Sales)	0.170
Kren & Kerr (1997)	268	Cash Comp	Market Valuation	0.256
	215	Total Comp	ROE	0.229
Wade, Porac & Pollack (1997)	266	Log (Salary)	ROE	0.100
	266	Log (Bonus)	ROE	0.210
	266	Log (Long-term Income)	ROE	0.070
David, Kochhar & Levitas (1998)	200	Total Comp	Total Assets, ROA	0.115
Finkelstein & Boyd (1998)	600	Log (Cash Comp)	Log (Sales), Log (Total Assets)	0.465
Sanders & Carpenter (1998)	258	Log (Total Comp)	Log (Sales), ROA	0.250
Buck, Bruce, Main & Udueni (2003)	287	Log (Total Comp)	Log (Sales), Shareholder return	0.263
Conyon & Peck (1998)	94	Total Comp (without ESO)	Total Employees, Shareholder return	0.065
Cordeiro & Veliyath (2003)	222	Log (Total Comp)	Log (Sales), ROA	0.150
	222	Log (Cash Comp)	Shareholder return	0.150
Hambrick & Finkelstein (1995)	752	Δ Total Comp	ΔSales, ΔROE, ΔShareholder return	0.090
Conyon, Peck and Sadler (2000)	249	Cash Comp	Shareholder return	-0.015
Gomez-Mejia *et al* (2003)	253	Total Comp	Sales, ROA Shareholder return	0.210
Gray and Benson (2003)	114	Cash Comp	Annual budget	0.630

Appendix 1: Meta-analysis Sample and related statistics (Continued)

Study	*Sample Size*	*Compensation Measure*	*Performance/size measure*	*Average Correlations*
Gunasekaragea *et al.* (2002)	36	Total Comp	Total Assets Tobin's Q	0.548
Duru & Iyengar (2002)	329 329 329 329	Salary Bonus LTIPs Option granted	Sales, Profit, Shareholder return, ROA	0.005 0.221 -0.075 0.020
Coombs & Gilley (2005)	406 406 406 406	Salary Bonus Options Total Comp	Log(Sales) Shareholder return ROA	0.123 0.133 0.087 0.060
Hall & Liedtka (2005)	51 51	Cash Comp/Total Comp Options/Total Comp	Log (Market Valuation) Profit	-0.200 0.004
Tosi et al (2004)	59 59	Cash Comp Total Comp	Log (Sales) Shareholder return, ROA	0.273 0.193
Boschen et al (2003)	30 30	Cash Comp Total Comp	Profit Shareholder return	-0.012 -0.010
Young & Buchholtz (2002)	216	Δ Total Comp	Shareholder return	0.060
Werner, Tosi, Gomez-Mejia (2004)	407	Δ Total Comp	Total Assets ROA	0.180
Garvey & Milbourn (2003)	1400	Cash Comp Options	Market Valuation, Shareholder return, Tobin's Q	0.081 0.141
Silva (2005)	257	Cash Comp	Log (Total employees), Relative financial performance to industry	0.100
Khan, Dharwadkar & Brandes (2005)	224 224 224	Cash Comp Options Total Comp	Sales, Tobin's Q Sales, Tobin's Q Sales, Tobin's Q	0.175 0.245 0.275

Appendix 2: List of Companies included in the sample data

No.	*Code*	*Name*	*Year End* (2005 as example)	*Market Capitalization* (in £'m as at October 2006)	*Industry*
1	2	Abbot Group	31/12/2005	699	Oil & Gas
2	7	Alliance Boots Plc	31/03/2005	7,848	Consumer Services
3	8	AMEC Plc	31/12/2005	1,239	Industrials
4	13	ARM Holdings	31/12/2005	1,605	Technology
5	16	Associated British Foods plc	17/09/2005	6,589	Consumer Goods
6	22	AWG Plc	31/03/2005	2,271	Utilities
7	24	BAE Systems	31/12/2005	13,464	Industrials
8	25	Balfour Beatty	31/12/2005	1,736	Industrials
9	26	Barratt Developments Plc	30/06/2005	2,621	Consumer Goods
10	28	BBA Group	31/12/2005	1,300	Industrials
11	38	BP plc	31/12/2005	114,478	Oil & Gas
12	43	British Airways	31/03/2005	5,196	Consumer Services
13	44	British American Tobacco	31/12/2005	29,645	Consumer Goods
14	47	British Sky Broadcasting Group	30/06/2005	9,620	Consumer Services
15	56	Cable & Wireless	31/03/2005	3,420	Telecommunications
16	58	Cairn Energy	31/12/2005	2,789	Oil & Gas
17	61	Carillion	31/12/2005	1,079	Industrials
18	63	Carpetright	30/04/2005	807	Consumer Services
19	66	Charter Plc	31/12/2005	1,523	Industrials
20	76	Corus Group	01/01/2005	4,146	Basic Materials
21	83	Daily Mail & General Trust	30/09/2005	2,706	Consumer Services
22	90	Diageo	30/06/2005	26,874	Consumer Goods
23	94	EASYJET	30/09/2005	2,141	Consumer Services
24	104	First Choice Holidays	31/10/2005	1,193	Consumer Services
25	110	GKN	31/12/2005	2,257	Consumer Goods

Appendix 2: List of Companies included in the sample data (Continued)

No.	Code	Name	Year End	Market Capitalization (£'m) as at Oct 2006	Industry
26	124	HAYS	30/06/2005	2,173	Industrials
27	125	Headlam Group	31/12/2005	468	Consumer Goods
28	148	Johnson Matthey plc	31/03/2005	3,151	Basic Materials
29	158	Laird Group plc	31/12/2005	710	Industrials
30	168	Marks & Spencer Group	31/03/2005	11,056	Consumer Services
31	169	Marshalls	31/12/2005	481	Industrials
32	173	MEGGITT	31/12/2005	1,448	Industrials
33	175	Millennium & Copthorne Hotels	31/12/2005	1,561	Consumer Services
34	201	Premier Oil	31/12/2005	1,060	Oil & Gas
35	208	Rank Group plc	31/12/2005	1,426	Consumer Services
36	218	REXAM	31/12/2005	3,414	Industrials
37	221	Rio Tinto plc	31/12/2005	30,021	Basic Materials
38	228	Sage Group plc	30/09/2005	3,072	Technology
39	229	SAINSBURY(J)	26/03/2005	7,344	Consumer Services
40	237	Shanks Group	31/03/2005	444	Industrials
41	240	Signet Group	01/02/2005	2,073	Consumer Services
42	242	Smith & Nephew	31/12/2005	4,807	Health Care
43	259	Taylor Nelson Sofres	31/12/2005	926	Consumer Services
44	260	Taylor Woodrow plc	31/12/2005	2,161	Consumer Goods
45	276	VODAFONE	31/03/2005	71,049	Telecommunications
46	277	VT Group	31/03/2005	833	Industrials
47	282	Whitbread plc	03/03/2005	3,087	Consumer Services
48	284	Wilson Bowden	31/12/2005	1,659	Consumer Goods
49	287	Wolseley Plc	31/07/2005	8,112	Industrials
50	292	WPP Group Plc	31/12/2005	8,303	Consumer Services

Appendix 3: Determinants of Total Executive Pay – Value to Executives (Arellano-Bond GMM Estimator)

Variables	Performance Variables			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Lag Dependent Variable	**.6203*** ** (4.97)	**.5848*** ** (4.83)	**.5903*** ** (4.93)	**.5843*** ** (4.76)
Performance	**.1002** ** (2.05)	.0161 (0.73)	**.0324*** ** (3.42)	.0005 (0.46)
Log of Firm's Market Valuation	.0472 (0.63)	**.1243*** (1.77)	**.1218*** (1.85)	**.1348*** (1.93)
Executive Ownership	**-8.426*** ** (-2.72)	**-8.454*** ** (-2.76)	**-8.544*** ** (-2.83)	**-8.500*** ** (-2.77)
Executive Tenure	**.0766** ** (2.50)	**.0782*** ** (2.59)	**.0779*** ** (2.61)	**.0787** ** (2.60)
Executive Age	.0014 (0.02)	-.0007 (-0.01)	.0010 (0.02)	.0008 (0.01)
Log of Board Size	**.2975*** (1.81)	**.2933*** (1.79)	**.2737*** (1.72)	**.2850*** (1.75)
NEDs	-.5235 (-1.39)	-.5409 (-1.46)	-.4797 (-1.32)	-.5470 (-1.46)
Institutional Shareholdings	-.0308 (-0.12)	-.0464 (-0.18)	-.1186 (-0.47)	-.0268 (-0.10)
CEO Dummy	**.5598*** ** (5.03)	**.5580*** ** (5.07)	**.5366*** ** (4.93)	**.5590*** ** (5.08)
Const	-.0782 (-1.12)	-.0783 (-1.13)	-.0796 (-1.17)	-.0817 (-1.17)
Sargan Test	9.70*	10.96*	11.91**	11.44**
Arellano-Bond order 1	-5.87***	-5.68***	-5.61***	-5.58***
Arellano-Bond order 2	0.35	0.13	-0.44	0.08
Observations (N)	514	514	514	514

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

Appendix 4: Determinants of Cash Compensation (Arellano-Bond GMM Estimator)

Variables	Performance Variables			
	TSR	**TobinQ**	**ROCE**	**EPS**
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Lag Dependent variable	**.2266**** (2.29)	**.2386**** (2.44)	**.2502**** (2.56)	**.2532**** (2.59)
Performance	-.0309 (-1.09)	-.0127 (-0.98)	-.0057 (-1.05)	.0001 (0.17)
Log of Firm's Market Valuation	.0692 (1.54)	.0494 (1.15)	.0362 (0.88)	.0303 (0.71)
Executive Ownership	-2.316 (-1.26)	-2.311 (-1.25)	-2.358 (-1.27)	-2.396 (-1.28)
Executive Tenure	**.0375**** (2.08)	**.0373**** (2.06)	**.0372**** (2.04)	**.0369**** (2.02)
Executive Age	.0025 (0.06)	.0026 (0.06)	.0028 (0.07)	.0038 (0.09)
Log of Board Size	.0492 (0.51)	.0394 (0.40)	.0527 (0.54)	.0547 (0.55)
NEDs	**-.5037**** (-2.25)	**-.4936**** (-2.20)	**-.5155**** (-2.28)	**-.5069**** (-2.23)
Institutional Shareholdings	-.1800 (-1.17)	-.1708 (-1.10)	-.1638 (-1.06)	-.1777 (-1.14)
CEO Dummy	**.4592***** (6.96)	**.4591***** (6.92)	**.4637***** (6.95)	**.4596***** (6.88)
Const	.0292 (0.70)	.0300 (0.71)	.0291 (0.69)	.0277 (0.65)
Sargan Test	18.53***	17.44***	17.13***	16.71***
Arellano-Bond order 1	-5.31***	-5.55***	-5.68***	-5.65***
Arellano-Bond order 2	-0.59	-0.37	-0.18	-0.35
Observations (N)	514	514	514	514

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

Appendix 5: Determinants of Incentive Pay – Cost to Company (Arellano-Bond GMM Estimator)

Dependent Variable: Incentive Pay (Cost to Co.)	Performance Variables			
	TSR	TobinQ	ROCE	EPS
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Lag Dependent variable	**.5152*** ** (3.81)	**.5252*** ** (3.78)	**.5057*** ** (3.83)	**.5029*** ** (3.79)
Performance	-.1018 (-1.07)	.0318 (0.58)	.0254 (0.30)	-.0002 (-0.14)
Log of Firm's Market Valuation	.0744 (0.52)	.1508 (1.05)	.1770 (1.33)	.1859 (1.34)
Executive Ownership	1.395 (0.22)	1.732 (0.27)	1.537 (0.24)	1.654 (0.26)
Executive Tenure	-.0005 (-0.01)	.0002 (0.00)	.0010 (0.01)	.0016 (0.02)
Executive Age	**.2125*** (1.73)	**.2113*** (1.71)	**.2114*** (1.73)	**.2102*** (1.72)
Log of Board Size	.3436 (1.05)	.3811 (1.15)	.3785 (1.16)	.3639 (1.10)
NEDs	-.0817 (-0.10)	.0980 (0.12)	.0671 (0.09)	.1006 (0.13)
Institutional Shareholdings	**1.310**** (2.37)	**1.313**** (2.36)	**1.304**** (2.36)	**1.323**** (2.41)
CEO Dummy	.3242 (1.02)	.3209 (1.00)	.3263 (1.03)	.33325 (1.05)
Const	-.1206 (-1.00)	-.1289 (-1.06)	-.1252 (-1.04)	-.1260 (-1.04)
Sargan Test	17.82**	15.09***	16.52***	15.95***
Arellano-Bond order 1	-5.63***	-5.76***	-5.78***	-5.76***
Arellano-Bond order 2	2.08**	2.16**	2.11**	2.13**
Observations (N)	363	363	363	363

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*

Appendix 6: Determinants of Incentive Pay Ratio– Value to Executives (Arellano-Bond GMM Estimator)

Dependent Variable: Proportion of Incentive Pay (Value to Exes)	Performance Variables			
	TSR	TobinQ	ROCE	EPS
	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Lag Dependent Variable	**.4171*** ** (4.84)	**.4185*** ** (4.80)	**.4850*** ** (5.37)	**.4279*** ** (4.81)
Performance	**.0414*** (1.83)	.0022 (0.20)	**.0247*** ** (5.21)	.0002 (0.48)
Log of Firm's Market Valuation	.0229 (0.65)	**.0595*** (1.75)	.0516 (1.60)	**.0597*** (1.76)
Executive Ownership	**-4.574*** ** (-3.04)	**-4.554*** ** (-3.01)	**-4.574*** ** (-3.05)	**-4.579*** ** (-3.01)
Executive Tenure	**.0321** ** (2.20)	**.0325** ** (2.22)	**.0314** ** (2.15)	**.0323** ** (2.19)
Executive Age	-.0023 (-0.07)	-.0028 (-0.09)	-.0013 (-0.04)	-.0017 (-0.05)
Log of Board Size	**.1424*** (1.80)	**.1325*** (1.65)	**.1320*** (1.68)	**.1379*** (1.72)
NEDs	.0598 (0.34)	.0395 (0.23)	.0777 (0.45)	.0384 (0.22)
Institutional Shareholdings	.0714 (0.57)	.0745 (0.59)	.0098 (0.08)	.0753 (0.60)
CEO Dummy	.0779 (1.46)	.0769 (1.43)	.0602 (1.13)	.0759 (1.41)
Const	-.0512 (-1.54)	-.0527 (-1.58)	-.0535 (-1.61)	-.0548 (-1.62)
Sargan Test	10.26*	10.49*	10.04*	9.70*
Arellano-Bond order 1	-7.67***	-7.69***	-7.86***	-7.66***
Arellano-Bond order 2	1.24	1.30	0.99	1.31
Observations (N)	514	514	514	514

*, **, ***: *Statistically significant at 10%, 5% & 1% level respectively*