Essays on Executive Compensation: Examining Pay and Performance Associations, Choice of Performance measures and the Use of Relative Performance Evaluation in Compensation Contracts

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DECLARATION

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged

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ABSTRACT

This thesis contributes to our understanding of executive compensation schemes in the United Kingdom (UK). On one hand, the study focuses on the effectiveness of long-term incentive plans (LTIPS) which has come under scrutiny in the recent past. On the other hand, it tests within various settings whether compensation contracts are designed optimally. It also looks in detail at the contractual features of long-term incentives which have received little attention in the literature to date.

The first empirical chapter analyses the effect of firm performance on Chief Executive Officer/ Chief Financial Officer (CEO/CFO) pay by employing a sample of non-financial FTSE 350 firms during 2010-2014. We test this association by differentiating between the impacts of short-term and long-term performance on short and long-term compensation. The short and long-term compensation components consist of cash (salary and bonus), equity (performance share plan, share option, matching plan and others) and total realized pay (salary, bonus and total equity vested) of CEO and CFO compensation. We also explore the effectiveness of LTIPs awarded to executives by examining the impact of different numbers, amounts and types of long-term plans on the long-term pay-performance responsiveness. The results indicate that CEO long-term pay, total realized pay and total remuneration are determined by a firm's three-year performance. These results also hold true for CFO but the relationship is not as strong as that for CEO. Also, for CEOs and CFOs, companies that use three or four separate LTIP plans award higher realized pay and total remuneration than companies that do not award any LTIP. However, for CEOs, companies that operate one, two or three plans in a compensation package, align the interests of CEOs with those of the shareholders. Basic plans in compensation packages tend to increase the pay-performance responsiveness. Within these LTIPs, the more valuable the grants are, the stronger the pay-performance relationship becomes. However, for

CFOs, greater number or amounts of LTIPs correspond to higher total compensation and realized pay and greater pay-performance responsiveness. These findings suggest that higher grants encourage greater CFO effort, leading to higher equity vesting because of the attainment of performance targets. For CFO, the pay-performance responsiveness differs in number and amount of long-term incentives awarded than that of CEO. Finally, these findings remain consistent with the use of market adjusted TSR, further strengthening the conclusion of the research question.

Next, we analyse the influences on and the effects of the choice of performance measure in CEO compensation contracts, for a sample of 3400 plans from 2007 to 2015. We investigate the link between the choice of performance measure and the volatility of earnings per share (EPS) and total shareholder return (TSR), taking into account four different performance categories, in that a firm may use either EPS or TSR, both, or neither. This allows us to utilize a comprehensive cross-section of plans and accounts for when both EPS and TSR are jointly employed. We find that EPS in combination with TSR is the most common performance metric employed by firms. The findings show that firms with higher EPS volatility and lower TSR volatility are more likely to choose TSR as a performance measure and that firms with higher EPS volatility are less likely to choose EPS alone; we argue that these results are in line with optimal contracting theory. Our results are robust to controlling for plan types, industry and time fixed effects. We control for the effect of the identity of the advising compensation consultant and also for industry on the category of performance measure, and find that some consultants, and some industries, have marked preferences for one measure over another. This, we argue, is an evidence of institutional isomorphism.

The final empirical chapter analyses the effect of common shock on the selection of relative performance evaluation (RPE) based plan in the construction of CEO compensation packages.

The results indicate that firms implement RPE based measures exclusively when a performance measure contains significant shocks which are common amongst peer companies and are consistent with the predictions of agency theory. These results are robust after controlling for the identity of the remuneration consultant and alternate proxies for common risk, for example, r-square and correlation. We provide a novel analysis of the breakdown of RPE characteristics, namely, different peer choices, threshold targets, and the equity vesting pertaining to these threshold targets by industry in compensation contracts as set by the firms. The findings reveal that firms are very distinct in their peer group selection and the choice of performance targets. Furthermore, we assess the relationship between common risk and the characteristics of the RPE. We identify that firms facing greater common risk tend to employ tougher performance targets in the shape of wider target spread and a lower percentage of equity vesting at the median and upper quartile threshold targets, where target spread is the difference between median and maximum performance required for equity vesting. Finally, we find that vesting percentages vary in characteristics of RPE.

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LIST OF ABBREVIATIONS

ABS	Absolute Performance
AGMS	Annual General Meetings
CEO	Chief Executive Officer
CFO	Chief Financial Officer
DRRR	Directors' Remuneration Report Regulations
EPS	Earnings per Share
EVA	Economic Value Added
FE	Fixed Effects Model
FTSE	Financial Times Stock Exchange
KPIs	Key Performance Indicators
LSE	London Stock Exchange
LTIPs	Long-Term Incentive Plans
MP	Member of Parliament
NEDS	Non-Executive Directors
OLS	Ordinary Least Square Method
PSA	Performance Share Award
PPS	Pay-performance sensitivity
PSPs	Performance Share Plans
PVSOs	Performance Vested Stock Options
PWC	PricewaterhouseCoopers
RC	Remuneration Committee

ROA	Return on Asset
ROE	Return on Equity
RPE	Relative Performance Evaluation
SEC	Security Exchange Commission
TSR	Total Shareholder Return
UK	United Kingdom
US	United States of America
VIF	Variance Inflation Factor

1 INTRODUCTION

1.1 Motivation

The motivation for this thesis comes from major milestones that have affected the world of businesses in contemporary times. During the financial crisis of 2007-2008, Richard Fuld, Chief Executive Officer (CEO) and the chairman at Lehman Brother were awarded 500 million dollars, only four days prior to the bankruptcy, despite having announced that the firm had recently lost four billion dollars in the third quarter of 2007. There were controversies on the amount he was paid right after the bankruptcy was declared as well as disagreement on how much he was paid in total as compensation over the period 2000-2008. This led to the heightened involvement in understanding and questioning the structures around executive compensation schemes not only in the US but also globally.

Within the UK context, as well, a few prominent cases have received extensive media coverage. For instance, the case of the 2003 shareholder revolt at GlaxoSmithKline which primarily focused on the pay package of its CEO Jean Pierre Garnier[1] and later in 2008, there was a strong disapproval linked with the disclosure that Sir Fred Goodwin, the CEO of failed Royal Bank of Scotland received a pension entitlement of up to £30 million[2].

Similarly, during the last two decades, stock-based compensation has gained significant attention from the media, the general public, academia, and legislators. More recently, in May 2017, MPs (Member Of Parliament) called on the government to ban the award of lucrative and

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[1] Jill Treanor (2012), GlaxoSmithKline chief's pay package more than doubles to £6.7m, *The Guardian*. https://www.theguardian.com/business/2012/mar/12/glaxosmithkline-chief-pay-andrew-witty [accessed on July 21, 2017].

[2] Richard Evens (2009), Sir Fred Goodwin: True cost of pension 'is £30m', *The Telegraph*. http://www.telegraph.co.uk/finance/personalfinance/pensions/4861923/Sir-Fred-Goodwin-True-cost-of-pension-is-30m.html [accessed on July 22, 2017].

complex share-based incentive schemes to the executives of UK firms.[3] Additionally, shareholders have also shown their displeasure over the granting of long-term incentive plans (LTIPs), reflecting in the declining support of such approval.[4] MPs also suggest a need to award simpler deferred stock option instead of LTIPs, which would only cash in later years, perhaps after their retirement. There have been ongoing discussions on the design of LTIPs, as they continue to grow in complexity. One compensation consultant, Mercer argues that abolishing LTIPs is too prescriptive but a design of LTIPs and the way performance measures are linked to it needs careful attention.

Higher levels of executive pay have been widely discussed worldwide. As an example, Murphy (2013) reports that median CEO compensation at S&P 500 firms has increased from $2.9 million in 1992 to $9.0 million in 2011, signifying 4% growth p.a. for a period of 30 years. While in the UK, the average total pay of FTSE 100 Chief Executive Officers (CEOs) has risen by 13.6% per year, from an average of £1 million to £4.2 million for the period from 1998–2010, far exceeding the 1.7% average annual increase in the FTSE 100 index.[5] However, it is important to know whether executives are compensated to act in the best interest of shareholders.

The UK has been a "pioneer in corporate governance reforms", also, emphasizing the aspects of executive compensation regulation (Thompson, 2005). It has undertaken a series of corporate

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[3] See Christopher Williams (2017), MPs call for ban on complex incentive schemes in corporate governance crackdown, *The Telegraph*.
http://www.telegraph.co.uk/business/2017/04/04/mps-call-ban-complex-incentive-schemes-soon-possible/
[accessed on July 21, 2017].
[4] Nick Dawson (2017), LTIP-ing Point: Is This the End of Long-Term Incentive Plans?, *Harvard Report*.
https://corpgov.law.harvard.edu/2017/05/12/ltip-ing-point-is-this-the-end-of-long-term-incentive-plans/
[accessed on July 21, 2017].
[5] Executive remuneration: discussion paper (2011), *Department for Business Innovation and Skills ("BIS")*
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/31660/11-1287-executive-remuneration-discussion-paper.pdf
[accessed on July 12, 2017].

governance reforms since the publication of the Cadbury Report in 1992 to ensure transparency as well as encouraging shareholders to play an active role in executive compensation. Following the UK, European and other countries have also established several regulations on executive compensation. For instance, even the US, with its historic approach to business-friendly corporate laws, has initiated "say on pay" regulation, while, as an example, some European jurisdictions like Germany and Switzerland[6] have a binding shareholder vote on matters related to executive compensation and have initiated or have attempted to initiate executive-employee compensation ratio or salary caps. Moreover, in the US, the laws on governance are that a firm should adhere strictly according to the terms of the regulations and if firms do not comply, they will be penalized. However, in the UK, instead of firms being subject to mandatory compliance, the principle of "comply or explain" is applied to the corporate governance codes. This was put forward in the Cadbury Report as a Code of Best Practice in 1992 and gives freedom to firms to either comply with the governance codes' principles or give a reasonable explanation if they fail to do so (Ndzi, 2014).

The motivations of this study also comes from the rising interest in addressing agency problems surrounding executive compensation, along with widespread concerns whether the structure of compensation contracts is designed optimally. Extant literature on identifying a clear link between executive compensation and performance has primarily involved US firms (e.g. Jensen and Murphy, 1990; Mehran, 1995), whereas relatively, limited research has been carried out in the UK context (Ozkan, 2011). Most importantly, this small body of research, by and large, has remained inconclusive in its results. Thus, the debate concerning executive compensation pertaining to higher levels of compensation is ongoing and calls for a further examination from

[6] Executive Remuneration: European Corporate Governance Developments (2013), *Willis Towers Watson*. https://www.towerswatson.com/en/Insights/IC-Types/Technical-Regulatory/2013/Executive-Remuneration-European-Corporate-Governance-Developments
[accessed on July 12, 2017].

various perspectives. Therefore, it is necessary to analyse various components of executive compensation in investigating pay for performance association. To this end, this study analyses different definitions which are mentioned in the prior literature and also synthesizing a new variable, namely, ‘‘total realized pay’’. Total realized pay is the sum of salary, bonus, payouts from performance share plans and the value of options exercised. Despite the growing concern in this area, prior literature fails to consider a long-term measure of the firm performance.

Nowadays, long-term incentives are frequently granted to the executives in the form of shares which vest after the attainment of performance hurdles. The last decade has seen a rapid shift in the landscape of long-term incentive plans and firms have started to grant multiple long-term incentive plans to ensure executives act in the best interests of shareholders. As discussed earlier, fuelled by the strong interest in the structure of executive remuneration and complexity in long-term incentives by various stakeholders, the question that has arguably spurred most academic interest is whether long-term incentive plans are effective in aligning managerial interests and shareholder wealth. To date, there has been no study which identifies the effectiveness of different numbers and amount of long-term incentive plans awarded to executives.

In addition, there are widespread concerns about the effectiveness of contractual terms of CEO compensation. One of the key elements of contractual terms has been the selection of performance measure. However, in this regard, even the corporate governance codes in the UK do not make any recommendations on specific performance measures that firms should employ while assessing the performance of the company. Extant literature restricts its focus on how the volatility of performance measure impacts the pay-performance sensitivity (e.g., Sloan, 1993). However, it is silent on the determinants of the choice of performance measures for UK firms. Parallel to this, there is no detailed discussion about an ever-increasing role of compensation

consultants in aspects of compensation design. These are pertinent questions that need to be addressed in order to better understand this subject matter.

Compensation consultants highlight that current practices of the UK firms are highly innovative in selecting performance metrics but this area needs further exploration. On the other hand, in the context of US, there are studies, albeit a few in number, that investigate the breakdown of mechanics of incentivization in compensation contracts of the US firms (De Angelis, 2015; Li and Wang, 2016). These studies also point out that limited disclosure and transparency restricts the availability of contractual terms, which has led many to question whether compensation contracts are designed optimally. Thus, the aim of this study is to understand and show detailed structure and mechanism of executive compensation schemes from the information available in directors' remuneration section of the annual reports.

Turning towards the different performance standards within the executive compensation packages which are tied to relative performance evaluation (RPE) and/or absolute terms, where RPE is measured relative to externally fixed benchmarks or different peer groups. On the other hand, absolute targets are measured based on fixed internal standards. Holmstrom (1982) asserts that an optimal incentive contract would insulate the firm from common shocks and provide a more informative measure by evaluating firm performance relative to its peers. However, prior literature has shown limited evidence on the use of RPE in compensation contracts (Antle and Smith 1986; Gibbons and Murphy 1990; Janakiraman et al., 1992; Aggarwal and Samwick 1999b; Rajgopal et al., 2006; Albuquerque 2009). One possible reason could be that there was limited disclosure during the time period of their analysis. These previous studies fail to consider the potentially vital contractual details of RPE contracts, such as characteristics of peer group, performance metrics, targets and their vesting levels. Directors' Remuneration Report (2002) and Security Exchange Commission (2006) results in enhanced

disclosure and transparency in reporting executive compensation contracts, which in turn produce an increase in working papers on the subject of RPE provision, mainly in the US. Surprisingly, there exists only one published work carried out by Carter et al. (2009) for the single year 2004 in the UK context**.** At present, firms are much more sophisticated and innovative in the design of compensation contracts. Regarding this, studies in the area are far from conclusive and often incomplete. In this gap, we see an opportunity for additional research. Therefore, we have analysed the adoption and the characteristics of RPE along with their determinants, specific to the UK market. There are additional concerns on characteristics of RPE that are set in a manner such that they meet performance targets which leads greater equity vesting. This crucial aspect also forms another motive for this research we have undertaken.

1.2 Contribution

This thesis contributes to the existing academic literature on executive compensation in several aspects.

In explaining higher levels of compensation, this study employs four broad measures of compensation comprising of short-term compensation (cash compensation), equity pay, total realized pay (salary, bonus and total equity vested) and total compensation as relying on a single compensation variable (e.g. total compensation) could lead to a misleading interpretation of theoretical implications of the findings. Within the UK context, studies do not consider the actual payouts from equity compensation while analyzing pay for performance associations (e.g. Ozkan, 2011). This is the first time realized pay has been studied in the UK market. The growing complexity in the design of compensation contracts arises from varying number and value of incentives awarded to executives. Therefore, it would be interesting to analyse the

effectiveness of different long-term incentive arrangements in strengthening the relationship between executive compensation and performance.

Previous papers mainly focus on examining the impact of accounting or market-based volatility on the level of compensation and pay-performance association (e.g. Sloan, 1993), whereas we elaborate this relationship by looking at performance choices in the compensation contracts of UK firms. So far, none of the previous research has considered the impact of volatility on either earning or total shareholder return, both or neither. Also, limited research exists on the selection of performance measure in equity compensation. Mostly, the choice of performance measures has been analysed in the bonus contracts. Therefore, this study helps to elucidate the factors that go into determining the selection of Earnings per Share (EPS) and Total Shareholder Return (TSR) jointly, EPS and TSR individually, and neither EPS nor TSR. Additionally, the literature on executive compensation, globally, does not perform a detailed breakdown of EPS and TSR plan characteristics and relative benchmarks, nor have they examined targets and vesting percentages triggered at the median and upper quartile threshold in detail, to date. Consequently, to the best of our knowledge, the dataset used in this research is the most extensive and detailed in the context of analyzing incentive based contracts.

Additionally, this study represents one of the first attempts to shed light on the scant literature of compensation contract complexity by classifying and analyzing the finer details of RPE characteristics by industry for UK firms. A stream of literature focusing on the adoption of relative performance conditions has not considered absolute measures nor have they analysed the characteristics of plans with relative performance conditions (e.g. Carter et al., 2009; Gong et al. 2011). We also investigate the determinants for selection of peer group categories and threshold targets and vesting levels pertaining to the median and maximum thresholds in RPE based targets, which was a matter of debate on the topic of executive compensation. The

descriptive statistics of this study also provide exploratory evidence on detail breakdown of the broad index, sector and bespoke peers employed in relative performance evaluation (RPE) plans that were ignored in the prior literature. To this end, this study also extends the academic enquiry on RPE and analyses the effect of different characteristics of RPE on the percentage of equity that vests.

1.3 Outline of the Thesis

The remainder of the thesis is structured as follows and has a thematic arrangement around executive pay-performance relationship, the choice of performance measures and the selection of relative performance evaluation. Chapter 2 presents in detail a discussion on the structure of executive compensation packages in UK firms. Alongside, the most compelling reports on corporate governance regulations concerning executive compensation are studied in tandem with their recommendations. The existing reports comprise of the Cadbury Report (1992), the Greenbury Report (1995), the Hampel Report (1998), the Combined Code (1998) and the Directors Remuneration Report Regulations (2002).

Chapter 3 provides an overview of a theoretical perspective which has been used in the context of executive compensation matters and governance conflict. Next, this chapter sets out the literature review for the following three fields: executive compensation and performance relationship, the choice of performance measure, and the selection of relative performance in compensation contracts. The comprehensive review of theoretical perspectives along with research on prior studies lays a strong theoretical foundation towards the formulation of research hypotheses and an explanation for these findings. Further, this section aids in providing a background against which the contributions of this study are to be assessed.

The second part of the thesis presents three empirical chapters related to the aspects of executive compensation.

The first empirical study in Chapter 4 concentrates on the executive compensation package which has undergone considerable shifts and grown in complexity. In particular, this chapter distinguishes between the different components of executive compensation packages in order to provide a detailed understanding of the impact of firm performance on CEO/CFO pay. This chapter starts with the introduction and background information followed by the literature review on executive compensation, based on which we then formulate the research hypotheses. We follow this with discussions on research variables and present several models for the estimation. After the sample statistics, we discuss empirical results which test the association between pay and performance by employing broader measures of compensation and firm performance. The main data sources used in this chapter are the MEIS (data on executive compensation), DataStream, Fame and the Bloomberg. To determine the impact of different long-term incentive schemes in aligning executive interests and shareholder wealth, we interact three-year TSR with different numbers of LTIPs granted by the firm. We also interact TSR with the value granted within the different numbers of LTIPs and with the type of LTIP awarded by the firms to analyse pay-performance responsiveness after controlling for corporate governance mechanisms and firm-specific characteristics. In analysing these associations, we employ fixed effects model and conduct several robustness tests while employing market adjusted TSR as a measure of performance.

The second empirical study in Chapter 5 focuses on performance metric employed in the construction of Chief Executive Officer (CEO) compensation contracts. The first part of the chapter empirically investigates the explanation behind the selection of EPS exclusively, TSR alone, neither EPS nor TSR and the joint selection of TSR and EPS performance categories by

utilizing multinomial logit model. Similar to the previous chapter, Chapter 5 starts with an introduction and background information. We apply optimal contracting theory as a basis of this empirical chapter. We review the literature and propose the hypothesis that greater volatility in market-based measure results in a greater likelihood of the selection of accounting based measure. As also, greater volatility in accounting-based measure results in a greater likelihood for the choice of market-based measure. This chapter continues by explaining the methodology and presenting sample statistics. Then, this continues by providing distribution of the performance criteria that are attached to different elements of long-term incentive schemes. The main data sources used in this chapter are the directors' remuneration section of the annual reports, MEIS, DataStream, Fame and the Bloomberg. After discussions on empirical findings and testing the robustness of main results, the second part of the chapter continues by providing descriptive statistics on the breakdown of different types of EPS and TSR and comparator group employed to evaluate firm's performance and the vesting percentages pertaining to minimum and upper quartile thresholds of TSR and EPS based measures. Following these descriptive statistics, we investigate how the detail of TSR and EPS performance target influence the actual payout. This allows us to analyse whether there exist certain norms and patterns in performance targets. Chapter 5 ends with a summary of empirical results and a discussion on findings from the descriptive statistics. The results of these investigations are expected to be of particular interest to policymakers, as well as, consultants and have been addressed as part of the recommendation in the thesis.

Chapter 6 consists of the last empirical study where we concentrate on performance standards with a specific focus on the use of relative performance evaluation in compensation contracts. We empirically explore the relationship between the common risk and the choice of relative performance evaluation in compensation contracts. This chapter starts with the introduction and background context. After an extensive literature review on relative performance evaluation,

we hypothesize that greater common shocks result in the selection of RPE plans. Then, we continue by discussing research variables, descriptive statistics of plans with relative conditions and the construction of the sample. Multinomial logit model has been utilized, by classifying firms into “RPE only”, “absolute only” and “absolute and RPE”. While documenting descriptive statistics, we note that firms vary in their selection of RPE characteristics: peer group selection, target spread, initial and upper quartile vesting in their relative based plans. Following these analyses, we investigate the impact of common risk on these characteristics of RPE. This chapter then focuses on analysing the extent to which these different characteristics of RPE affect the equity vesting. Chapter 6 ends with a summary of empirical results and a discussion on the implications of these results.

We have a detailed description of how this research contributes to the already existing literature, yet some references can be found in the introduction section of each empirical chapter. Similarly, we provide a brief conclusion at the end of each empirical chapter, a more detailed discussion and an overall conclusion in Chapter 7, which additionally, outline the possible avenues for future empirical enquiry in the area of executive compensation.

2 CORPORATE GOVERNANCE REPORTS AND THE STRUCTURE OF REMUNERATION CONTRACTS

The development of corporate governance regulations has its roots in the corporate scandals that came to surface in the late 1980s and early 1990s, such as the collapse of the BCCI bank in 1991. Thereafter, in order to gain the confidence of investors, these regulations have focused not only on the overall corporate governance, but also the transparency and accountability of executive pay and on internal governance structure for the formation of executive compensation packages. The corporate governance codes consist of Cadbury Report (1992), the Greenbury Report (1995), the Hampel Report and the Combined Code (1998), the Directors' Remuneration Report Regulations (2002) and the 2013 Reforms.[7]

2.1 The Development of Corporate Governance and Executive Remuneration in the UK

2.1.1 Cadbury Report

The Cadbury Report was published in 1992 and aimed to improve corporate governance by outlining the responsibilities of the board of directors. This Report specifies the Code of Best Practice that a company needs to follow in order to meet the highest standards of operations (Clarke, 2007). It also concentrates on aspects of auditing and financial reporting that the firms should adhere to, if listed on the London Stock Exchange (LSE). In this regard, it is the firm's board of directors' responsibility to provide an accurate account and statement about its financial position. This Code of Best Practice is based on the "comply or explain" principle.

[7] Although there are many reports around executive compensation and corporate governance, the scope of this chapter has been defined by those published reports which have been widely discussed and considered to be influential. However, the other reports which are not discussed and falls outside the scope of thesis are: Turnbull Report (1999), the Myners (2001), the Higgs Report (2003), the Smith Report (2003) and Walker report (2009).

This is characterized by the voluntary compliance by firms where the firms are expected to state whether they comply with the Code provisions and also explain reasons in case of its non-compliance. The adoption of such an approach would be considered as best practice.

The Cadbury Report recommends that the board of directors hold regular meetings, aim towards decentralization of power and authority, and if the CEO also holds the position of the chairman then it is recommended that there is provision for clear allocation of responsibilities for balanced power and authority in the company.[8] The Code also emphasizes on increasing the number of non-executive directors (NEDs). These NEDs should exercise greater independence when making decisions and should not have any vested interests except the fees and their shareholdings in the company.[9] Concerning the fees, the Code outlines that it should explicitly reflect the time during which NEDs committed their services to the company.[10] The Code furthermore recognizes the vital role played by institutional investors in a company and encourages them to make sustained contacts with the executives of the company for the exchange of opinions on performance, strategy, and the overall management quality. Also, the institutional investors should make proper use of their voting rights in matters related to the board.

The Cadbury Report offers some guidance on executive compensation. It was also the first instance that proposed the transfer of responsibility from executives to the remuneration committee for setting the levels of their own compensation; therefore, recommending that firms

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[8] See paragraph 4.9 of The Committee on the Financial Aspect of Corporate Governance (1992), *Report of the Committee on the Financial Aspects of Corporate Governance*.
http://www.ecgi.org/codes/documents/cadbury.pdf
[accessed on 21 May, 2016].
[9] See paragraph 4.12 of The Committee on the Financial Aspect of Corporate Governance (1992), *Report of the Committee on the Financial Aspects of Corporate Governance*.
http://www.ecgi.org/codes/documents/cadbury.pdf
[accessed on 21 May, 2016].
[10] Ibid, para. 4.13.

with no remuneration committee (RC) should form one, such that it comprises mainly or wholly of NEDs, making it less easy for executives to intervene (Girma et al., 2007). Also, the membership of the RC should be published in the annual report.[11] Further, the Report recommends the disclosure of the total compensation of directors as well as the chairman and of the top paid director. Additionally, providing separate figures of salary and performance-based components and a justification of the basis on which this performance is assessed is required too.[12] Lastly, as per the Report, future service contract of executives should not exceed more than three years without the approval of shareholders.[13]

2.1.2 Greenbury Report

Greenbury Report was published in 1995 by Sir Richard Greenbury and addresses the growing concerns over executive compensation schemes. The Greenbury Report incorporates a Code of Best Practice on director's remuneration. It outlines the disclosure criteria for executive compensation, linkage of rewards to performance and the responsibilities of the remuneration committee.

The Greenbury Report emphasizes on some areas which were already highlighted by the Cadbury Report. The former Report tasks the responsibility to RC in setting executive compensation which should mainly consist of NEDs in order to attain greater level of independence.[14] The report further highlights that service contracts and notice period for

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[11] See paragraph 4.42 of The Committee on the Financial Aspect of Corporate Governance (1992), *Report of the Committee on the Financial Aspects of Corporate Governance*.
http://www.ecgi.org/codes/documents/cadbury.pdf
[accessed on 21 May, 2016].
[12] Ibid, para. 4.40.
[13] Ibid, para. 4.41.

company directors should not exceed a maximum period of one year.[15] In accordance with the notice period, the board in conjunction with the remuneration committee should terminate the contracts of all non-performing directors of the company for reasons of better governance. Further, it recommends that the structure of executive compensation is to be a mix of base salary, annual bonuses, share options and long-term incentive plan.[16] The remuneration committee should prepare a report to the shareholders on behalf of the board that specifies how firm's performance is measured, how executives' rewards are related to it, how performance-based pay (bonus/LTIP) is linked to short/long-term objectives, and over time how the firm has performed in relative terms.[17] The report should be published in the firms' annual account.

The Greenbury Report also sheds light upon the need to link executive rewards to tougher performance conditions, instead of executives receiving awards for a mere increase in the share price which could be due to inflation or general market-wide movements.[18] Also, it is the first to mention that firms should use comparator groups in measuring relative performance.[19] PricewaterhouseCoopers (PWC) conducted an analysis in 1999 on the firm practices after the implementation of the Greenbury report in 1995 and concluded that most firms complied with this regulation only in their broadest terms, while a handful provided a finely detailed reporting.[20] This suggests that firms disclose compensation practices differently. This could be

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[14] See paragraph 4.8 of The Committee on the Financial Aspect of Corporate Governance (1992), *Report of the Committee on the Financial Aspects of Corporate Governance*.
http://www.ecgi.org/codes/documents/cadbury.pdf
[accessed on 21 May, 2016].
[15] See paragraph 7.13 of The Directors Remuneration: The Report of a Study Group Chaired by Sir Richard Greenbury (1995), *Greenbury Committee*.
http://www.ecgi.org/codes/documents/greenbury.pdf
[accessed on September 21, 2016].
[16] Ibid, para. 6.14.
[17] Ibid, para. 6.19.
[18] Ibid, para. 6.38
[19] Ibid, para. 6.39.
[20] Department of Trade and Industry, Monitoring of Corporate Governance Aspects of Directors' Remuneration (1999), *PricewaterhouseCoopers*.
http://webarchive.nationalarchives.gov.uk/20060214022110/http://www.dti.gov.uk/cld/pwcrep.pdf
[accessed on September 21, 2016].

partly due to the Greenbury Report not establishing a standardized format concerning this. Moreover, the RC reports to shareholders on the remuneration policy but it does not require approval of shareholders in setting this up, also giving the RC flexibility on the information they disclose.

2.1.3 Hampel Report and the Combined Code

The Hampel committee was established in 1995 and chaired by Sir Ronald Hampel. It endorses corporate governance as an important tool for the prosperity of the business. It reviews and reforms some of the recommendations and policy statements outlined in the previous two reports. However, the Committee also proposed that the recommendations of Cadbury, Greenbury and Hampel should be included in a single Code of Corporate Governance.

As such, the Hampel Report provided a list of boardroom principles that companies should adhere to. For instance, the board should be efficient in producing reliable information in a timely manner and should have at least one-third of non-executive directors on it.[21] The role of chairman and CEO are different positions and preferably should not be held by the same individual. However, if these two roles are given to the same individual then this needs to be justified.[22] Further, it also highlights the benefits of shareholder activism to a company. At the time when the report was published only a few shareholders attended the AGM but the more the number of attendees, the more meaningful the AGM becomes, possibly holding directors to become more accountable towards the shareholders. Moreover, the AGM is one of the

[21] See paragraph 3.14 of The Committee on Corporate Governance: Final Report (1998), *The Report of the Committee on Corporate Governance*.
http://www.ecgi.org/codes/documents/hampel.pdf
[accessed on September 21, 2016].
[22] Ibid, para. 3.17.

opportunities for small shareholders to be updated on activities of the company that involves their immediate presence and thus it would be good practice to have presentations concerning the same, with a scope for question and answer sessions for a more direct interaction with the shareholders.[23]

Hampel Report stresses the use of fixed pay for non-executives and suggests that if firms find it useful to provide incentive compensation in the form of firm's shares, they should do so, but refrain from making it a universal practice.[24] The Report does not suggest additional refinement in the Greenbury Report concerning performance-based pay of executive directors.[25] However, the report hints toward simplification of disclosure of compensation packages which may become too complex for a general audience.[26] Additionally, as firms merely make a statement in the annual report concerning their compliance with the Code, without providing full disclosure of details of firm's practices in achieving the provisions of the Code, from the perspective of the shareholders it may become merely a box-ticking procedure.[27]

Concerning the Combined Code which was published in 1998, now the UK Corporate Governance Code (UKCGC), this was revised in 2003, later updated in 2016 and contains many of the recommendations already stated in the Combined Code (Petrin, 2015) and has therefore not been considered as this falls outside the remit of the present thesis. The Combined Code establishes the aspects of corporate governance practices. It covers issues related to the management and operations of the company, including the board of directors, the remuneration packages for the board members and executives, and accountability as well as audit. In this

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[23] See paragraph 5.14 of The Committee on Corporate Governance: Final Report (1998), *The Report of the Committee on Corporate Governance*.
http://www.ecgi.org/codes/documents/hampel.pdf
[accessed on September 21, 2016].
[24] Ibid, para. 4.8.
[25] Ibid, para. 4.7.
[26] Ibid, para. 4.16.
[27] Ibid, para. 6.19.

regard, the role of the board should operate in such a way that it matches the goals and objectives and contributes towards firm enhancement. The board should consist of an equal ratio of executives and non-executives and should provide accounts of the company that reflects its financial position. The board should undertake the responsibility of setting up an audit committee to play a role in revising the company accounts (Alregab, 2016). It also encourages a continuous dialogue with its shareholders to understand their concerns. In addition, the Code also tasks institutional shareholders with the responsibility of making use of their voting rights.

According to this report, executive compensation packages are to be designed in a manner that they attract, motivate, and retain talented executives while avoiding excess pay that outweighs the value of the services delivered. To align executives' interests with shareholders, it is vital for a firm to proportionally allocate the performance-based element of pay.

2.1.4 Directors' Remuneration Report Regulations

Prior to 2002, the previous codes in the Cadbury, Greenbury, and Hampel Reports focused less on the disclosure requirements concerning executive compensation in comparison to Director's Remuneration Report (DRRR), which made this disclosure requirement more stringent. DRRR aims to strengthen the link between pay and performance and improve transparency in setting executive compensation. Consequently, the disclosure of pay arrangements became more rigorous, as well as detailed, aiding the public and investors to get a better insight into executive compensation matters (Petrin, 2015).

DRRR had to go through an internal audit before being approved by board of directors and shareholders. In fact, it was necessary for all quoted firms to disclose remuneration reports of their directors (Alregab, 2016). This report displays tables which compare executive pay and

performance over a five-year period. In addition to the information of RC role and their membership, it demonstrates compensation policy, year on year change in executive compensation, pension entitlements, base salary, and grants of share options and LTIPs of each individual director and termination payment.[28] Moreover, the report specified that the directors' remuneration report had to be verified by the company's external auditors. By doing so, investors and shareholders can evaluate whether the executives met the performance criteria as specified in their plan or not. Lastly, shareholders pass a non-binding say-on-pay vote, demonstrating whether they approve the remuneration report or not (Petrin, 2015). Taken together, these regulations are quite nuanced with regards to executive compensation schemes.

2.1.5 2013 Reforms

The disconnect in pay and performance relationship which led the UK Government to introduce a more stringent framework, taking effect from October 1, 2013, applies to public quoted firms (Petrin, 2015). In fact, it is noteworthy that these said insufficiencies were aggravated by the 2007 recession.

These reforms made several recommendations, but of interest, here, is the Three-part Director's Remuneration Report. The company's reporting on remuneration needs to be divided into three different parts. The first part is related to the annual statement with a personal reflection from the chairman of the remuneration committee. The annual statement summarizes key decisions made by firm directors concerning their remuneration as well as accounting for any substantial changes. Secondly, the report requires all public limited liability firms to provide a detailed

[28] See The Directors' Remuneration Report Regulations (2002), the '2002 Regulations', amending the Companies Act 1985.
http://www.opsi.gov.uk/si/si2002/20021986.htm
[accessed on September 19, 2016].

account on the implementation of the remuneration policy and the compensation awarded to the directors of the firm that appears in the annual report (Mallin, 2010). In addition, remuneration report for directors should contain information on each element of the remuneration package. Although it was already stated in the 2008 Regulation[29], it was reinforced in the 2013 Regulation that firms must provide a single remuneration figure for each individual director.[30] This should be displayed in the table and break down of the components consisting of salary, benefits, pensions, annual bonuses, equity compensation from achievement of performance targets and realized amount from LTIPs. Finally, the last part comprises of the remuneration policy of the directors as approved by the firms' shareholders.[31]

2.2 Executive Compensation Structure

Executive compensation contracts play a vital role in attracting, motivating, and retaining executives. It is important to analyse the structure, as a well-designed compensation contract is considered to be important for the long-term success of the company. These contracts consist of fixed and variable components and involve the following elements of executive compensation: base salary, annual bonus, share options, performance share plans, matching, benefits-in-kind, and pension.

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[29] See the section 2.4 of the brief by Tim Edmonds and Andrew Clark (2017), Banking executives' remuneration in the UK - Parliament UK, *House of Commons Library*.
http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06204#fullreport
[accessed on June 21, 2017].
[30] See for more details on the Schedule 8 of the 2008 Regulation
http://www.legislation.gov.uk/uksi/2013/1981/schedule/made
[accessed on June 21, 2017].
[31] Ibid, Part 3, section 4 -10.

2.2.1 Base Salary

Base salary is a fixed element in the executive compensation contract. It is usually paid monthly and reviewed, in most cases, annually. The previous literature argues that salary is a fundamental cash component for attracting talented executives (Murphy, 1999; Solomon, 2007). The amount of salary could be influenced by labour market forces and individual differences, such as age and experience. Since other elements of compensation are awarded as a percentage of salary, for instance, annual bonuses and the equity component of the compensation, this makes salary a crucial component of the compensation as a rise in base salary will also correspond to an increment in other components of executive compensation.

In recent years, there has been a shift in the structural composition of executive compensation packages. As reported by Ferri and Maber (2013), in 2005, on an average, 47% of the UK total compensation comprised of equity pay as opposed to 50% of the total compensation which was made up of base salary in 2007, as shown by Conyon et al. (2000). This indicates that over time firms place greater emphasis on the equity component of the compensation.

2.2.2 Annual Bonus

The bonus is one of the variable components of the compensation contracts and is awarded to executives annually, either in the form of cash payments or deferred shares or both. Like other incentives, it is calculated as a percentage of salary and is designed to compensate executives after meeting pre-specified short-term performance targets, which are usually based on financial yardsticks, such as profit, cash flow, return on assets (ROA) or individual performance targets established for that year. Sometimes operational yardsticks are also present in bonus contracts; these may consist of employee health and safety, individual productivity and the

customer satisfaction, as shown in the prior literature (Conyon and Sadler, 2001; Mallin, 2007; Sapp, 2008 etc). Therefore, it indicates that bonuses may include individual performance targets along with group performance targets. Unlike the salary element of executive compensation, bonuses are payments conditioned upon prior-achieved performance, as opposed to the future performance (Kim and Nofsinger, 2007). In 2011, more than 95% of firms included bonus contracts in their compensation packages, in contrast to 53% in 2007, as indicated by Bruce et al. (2007). This sheds light upon the proposition that the elements of compensation packages have undergone a considerable change.

2.2.3 Equity Compensation

2.2.3.1 Share Options

The grant of share options is usually limited to senior executives but may be extended to other employees of the firm. They give a right to executives (employees) to buy shares at a fixed price for a pre-specified term. Executive options typically vest three years after the grant date based on achievement of performance targets. Generally, an option expires between three to ten years from the grant date, after which the executive can no longer exercise the option. The majority of UK companies select ten-year option terms. Other important features of these options are that they are non-tradable and are terminated once executives leave the company, thus incentivizing them to retain their affiliation with the company. When reward vests, executives simply receive the difference in market price on the exercise date and the strike price as determined on the grant date.

In the 1970s, share option schemes were introduced in the UK which gained much popularity between the late 1980s and early 1990s (Lee et al., 2007). Pre-1995, the award of executive share options was contingent upon time and was considered to be the only equity vehicle of

choice. Previous studies have shown that executives take actions that lower exercise prices in order to maximize the value of options on the day of exercise, hence, conventional time-based options can be engineered (Bebchuk et al., 2002). Share options offer a risk-free opportunity as executives do not make any loss on a fall in share price but they gain with an increase in the share price. However, recent corporate governance reforms worldwide place a greater emphasis on share options to be subject to tougher performance conditions. Moreover, firms use different terminologies for share options such as stock options, performance options, and executive share option schemes (ESOs) as seen in annual reports. All different forms of long-term incentives are granted to achieve long-term goals and objectives of the company.

2.2.3.2 Performance Share Plans

Performance share plans (PSPs), also known as nil-cost options, are options on the company's stock with a zero-strike price which pay cash on the day they are exercised. Firms rarely construct PSPs in the form of cash reward and are mostly awarded in the form of shares. These shares are provided to executives after fulfilment of certain performance criteria as mentioned in their compensation contracts, which typically last for three years and are frequently updated on a rolling basis. In PSPs, unlike share options, participants benefit from the whole value of award not just the difference, since the exercise price is zero. Thus, PSP award valuation is calculated as the multiplication of firm's share price and maximum potential of share that executives can receive from the award.

LTIPs are more commonly referred to as performance share plan[32] and have gained popularity following the Greenbury Report recommendations. One of the main reasons behind the introduction of LTIPs was due to the absence of performance condition or sometimes lack of rigorous performance conditions in share options. Presently, in annual reports, the term "long-term incentive plan" is used in a much broader sense for all types of equity plans and is not just restricted to performance share plans only. As an example, the firm Britvic, in 2012, awarded share options under the category of LTIPs. Other different terminologies for performance share plans are executive incentive plans, condition shares, restricted stock shares, executive incentive plans, and performance share awards (PSA).

Long-term incentives encourage senior executives to improve long-term performance, by doing so, also enhances shareholdings in the company. Occasionally, executives are awarded one-off equity payments such as recruitment, retention or turnaround payments.

2.2.3.3 Share Matching Plans

Share matching plans, also known as co-investment plans are those in which executives invest part of their annual bonus in shares and if long-term performance conditions are met after three years, they receive a multiple of their initial investment in the form of shares. For some firms, this deferral is compulsory rather than voluntary. For example, in a "2:1" share matching plan, an additional grant of 200,000 shares is awarded on top of the initial deferral of 200,000 shares. This is conditioned on achieving performance targets.

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[32] See the paper by Kendon, Benns, and Sharman, Long Term Incentive Plans and Deferred Bonus Plans (UK), *Bird & Bird*.
https://www.twobirds.com/~/media/pdfs/expertise/employment/employment-incentive/long-term-incentive-plans-and-deferred-bonus-plans.pdf
[accessed on August 14, 2017].

2.2.4 Benefits-in-kind

Benefits-in-kind consists of health insurance, club memberships, colleague discount, car allowance, private use of jet, and other kinds of indirect benefits. Another example of executives' benefit could be when they are reimbursed for the distance or time travelled between their home and office. Usually, benefits-in-kind form a small proportion of executive compensation package, nonetheless, forming an important element for a company to be competitive in order to acquire talented executives.

2.2.5 Pension

Pension is mostly dependent upon the base salary component (which could build up over time or with bonuses) and encourages executives to work hard, alongside fulfilling the firm's objective to retain their executives, as it is not received until his/her retirement, thus motivating the executives to stay longer in the firm. Like other elements of compensation, an increase in base salary will, therefore, have an implication for the pension in the following years. Pensions have gained much popularity recently, partly due to the general increase in amount and also due to cases of very generous pension payments awarded to the outgoing executives of failed firms. For example, the outgoing CEO Martin Winterkorn at Volkswagen got a pension pot of €28.6 million despite the scandalous revelation of the company rigging emissions tests.[33] While in the UK, the Royal Bank of Scotland announced a loss of £24.1 billion but still awarded its CEO a

[33] Alan Tovey (2017), Departed VW chief Martin Winterkorn could get £22m payoff despite scandal, *The Telegraph*.
http://www.telegraph.co.uk/finance/newsbysector/industry/11887750/Departed-VW-chief-Martin-Winterkorn-could-get-22m-payoff-despite-scandal.html
[accessed on August 14, 2017].

lump sum of £650,000 pension funds.[34]

[34] Emily Garnham (2009), Failed RBS boss keeps quiet over his £650k pension, *Sunday Express*. http://www.express.co.uk/news/uk/86523/Failed-RBS-boss-keeps-quiet-over-his-650k-pension [accessed on August 14, 2017].

3 LITERATURE REVIEW

3.1 Introduction

As one type of popular area in corporate governance, the topic of executive compensation is a complex, constant work in progress and attracts numerous researchers. In this chapter, we review the significant body of empirical work in the field of executive compensation. Secondly, we provide an overview of theoretical frameworks which aid in explaining the association between executive compensation and firm performance and the way in which firms set specific contractual terms in the executive compensation package.

3.2 Theoretical Perspective on Executive Compensation

In the last few decades, various theoretical perspectives have been developed which have sought to establish an appropriate mechanism in the formation of executive compensation or presently, the way these theoretical perspectives explain the existence of a certain type of compensation structure in various settings. These theories consist of agency theory, managerial power theory, and tournament theory.

3.2.1 Agency Theory

Agency theory has had a huge impact on the finance and economics literature for many decades (Muth and Donaldson, 1998) and has also been studied in the context of corporate governance, predominantly, executive compensation (Ross, 1973). Shareholders own the company and managers work as agents to run the company on shareholders' behalf. There exists an information asymmetry as shareholders cannot monitor agents' activities directly and the managers have access to privileged information concerning the financial position of the

company since they are experts in their respective fields. Like other individuals, CEOs tend to pursue objectives that increase their own well-being. Consequently, this divergence of interests between executives and shareholders gives rise to an agency issue.

Post-1970s, the application of agency theory in compensation setting became popular with a greater focus on information symmetry between the principal and the agent.[35] Jensen and Meckling (1976) contend that this information symmetry causes contradictory motivations between the principal and the agent and that the issue of "separation and control" might be settled by writing appropriate contracts which comprise of stock-based compensation as well as effective monitoring. Later, Jensen and Murphy (1990) suggest that firms should devise contracts that assist in mitigating agency problems. They also contend that "how to pay" is a much bigger issue than the magnitude of pay. Agency theory focuses on closely tying the reward to actual or perceived firm performance. Firms seek to design optimal compensation policies that retain, attract, and motivate executives and aim to align executive interests with that of the shareholders (Conyon, 2006).

3.2.2 Managerial Power Theory

An alternative theory proposed by Bebchuk et al. (2002) and Bebchuk and Fried (2003) is the managerial power perspective. They contend that the process of compensation setting has strayed from the arms-length bargaining to rent extraction and the responsibility of this lies upon the shoulders of managers who hold key positions in the company. Although agency theory views performance-based pay as a key mechanism to solve agency problems, the

[35] Note: The literature has largely focused on information symmetry between the principal and the agent for the disparity between the information that is accessible to these parties. However, another potential reason maybe that shareholders are diverse group while the managers are a more coherent group.

managerial theory proposes that it creates further problems. This could be partly because agency theory ignores the powerful position occupied by the executives that control the sources of the organisation. Managerial power theory can take several other forms, for example, the influence of CEOs on the selection of easy performance targets, etc. The influence of CEO and other executives, directly or indirectly on the compensation committee, or on the board, is another important aspect in explaining executive compensation matters. In other words, board and remuneration committee aids in forming such compensation schemes that are favourable to executives. The manager power view also implies that levels of pay are too high and compensation contracts are designed poorly.

According to managerial power theory, the amount of rent extraction is the value of pay in excess of what executives would receive under a scheme that maximizes the shareholders' value. An example of rent extraction is when firms offer stock option grants to the executives which do not strongly link pay to performance. This enables executives to reap windfall gains for a mere increase in share price that is due to fluctuation in market or sector in which the firm operates.

Managerial theory believes that both internal and external directors of the firms have some hidden agenda to serve managerial interests as opposed to those of shareholders (Bebchuk and Fried, 2005). This thought process stems from the day to day relationships between executive directors on the board. The authors also point out that directors manipulate compensation contracts in ways that lead to higher managerial pay. By doing this, it is expected that their own compensation will also rise. Much of the extant literature on pay and performance has been analysed mainly from amongst these opposite strands of perspectives, either agency or managerial power theory.

3.2.3 Tournament Theory

Over time Tournament theory (Lazear and Rosen, 1981) has gained much popularity in the area of executive compensation. It emphasizes on rank order compensation schemes and offers an effective way for the principal to evaluate and motivates managers when their efforts are unobservable. In this context, prior empirical studies have focused the performance of the firm resulting from the tournament. Some studies (Frederickson, 1992; Hannan et al., 2008) find that tournaments are an effective way to reduce risk to managers when some risks are common among all managers. This results in higher level of managerial effort in the tournament as opposed to individual schemes, such as fixed pay. Thus, in these tournament based incentive schemes, executives are awarded higher compensation for relative performance as opposed to absolute performance.

3.3 Empirical Literature

The literature on executive pay is vast and the empirical studies selected for the general literature in this thesis are not exhaustive but each empirical chapter of the thesis also provides a specific literature to the topic of the respective chapter. Therefore, the following paragraphs focus only on the general background, noteworthy studies, and the recent trends of research on executive compensation.

3.3.1 Discussions on Pay for Performance Relationship

Executive compensation is one of the most extensively analysed research areas in the field of corporate governance. At the core of the majority of theoretical and empirical studies lies the question whether there exists a relationship between executive compensation and firm

performance. Although, the incentive system in the UK is much stricter and transparent, yet it is more complex than that in the US. However, it is noted that a large corpus of literature has more generally focused on the US.

Prior studies have also been carried out for countries other than the UK and US (Kaplan, 1994a; Kato, 1997 in Japan; Kaplan, 1994b, 1999 in Germany; Izan et al. 1998 in Australia; Zhou, 2000; Sapp, 2008 in Canada; Duffhues and Kabir, 2008 in Netherland; Cao and O'Halloran, 2012 in Ireland). For example, Kato (1997) reports a positive link between executive compensation and firm performance, measured by ROA, of 154 large Japanese firms. Whereas, Kaplan (1994a) finds a negative relationship between pay and performance for Japanese firms. Another research by Kaplan (1994b), consistent with his findings in Japan, reports a negative association between pay and performance for German firms in the 1980s. On the other hand, Zhou (2000) shows a positive association between executive compensation and company performance for 755 Canadian firms over the years 1991-1995. The author employs total compensation as a measure of salary, bonus, the value of stock options and long-term incentive plans granted during the year. Izan et al. (1998) do not show any significant link between firm performance and executive compensation for Australian firms. Their results remain robust within different specifications of compensation model (i.e. "changes" versus "level"). On the other hand, Duffhues and Kabir (2008) find a negative pay and performance relationship for 750 Dutch firms in the transportation, manufacturing and financial industries. Their study indicates that executives receive awards which they do not actually deserve. However, the results of their study contradict with the argument that executives are awarded for adding shareholder value. These research studies identify a mixed evidence of a relationship between executive pay and firm performance. The findings of these studies suggest that trend of pay-performance responsiveness may be company specific, as well as prone to be impacted by the presence of institutional owners or corporate governance codes. Even, the country-level

corporate governance characteristics and executive compensation transparency could be influential factors in explaining these results.

Turning towards US firms, one of the most influential studies that shed light on the association between executive compensation and performance for these firms is by Jensen and Murphy (1990). They find a statistically positive significant relationship between pay and performance and show that CEO wealth changed by $3.25 for every $1000 increase in shareholder wealth for US firms. Leonard (1990) studies 439 large US companies from 1981 to 1985. His results show that a firm which grants equity incentives such as traditional stock options tends to increase the ROE of the company and the companies that award bonuses in their compensation plans perform better than those that do not incorporate bonus schemes in their compensation contracts. However, the authors do not control for any corporate governance variables in their investigation.

Mehran (1995) examines the structure of executive compensation structure for 153 manufacturing US firms across the years 1979 to 1980 by employing OLS estimation. The measures of executive compensation comprise of the percentage of total compensation which is equity-based and the percentage of total compensation in the form of salary and bonuses. However, the author uses return on assets and TSR as proxies for firm performance. Mehran's (1995) result shows a significant positive association between equity-based compensation and firm performance. The author also points out that the manager's aim for more structural compensation, in order to bear less personal risk, is the manager's preference of cash pay over equity-based pay.

Aggarwal and Samwick (1999a) study 1500 large US firms from 1993 to 1996 by employing Ordinary Least Square (OLS) method. Their results provide support for the existence of the principal-agent model in executive compensation package and indicate a positive association

between total shareholder return and total compensation (measured by salary and bonus), as consistent with the findings in Deckop's (1998) study. The results by Sigler (2011) also show a positive relationship between pay and performance for 280 US firms after the Sarbanes-Oxley Act. However, unlike Aggarwal and Samwick's (1999a) study, Sigler (2011) uses total compensation as a measure of salary, bonus and stock gains. The latter also employs sales, firm size and return on equity (ROE) as explanatory variables, and points out that the firm size is the most dominant factor in determining the level of CEO compensation. The results of this study are congruent with the findings of Sridharan (1996), who observes CEO base salary to be positively related to sales growth, the value of assets, and firm size.

In the UK context, Main et al. (1996) are the first to investigate the equity component of the compensation for a sample of 50 companies during the periods 1983 to 1989. The authors find that an inclusion of share options in executive compensation packages increases pay-performance sensitivity, leading to a reduction in agency problems. During the period of their research analysis, share options were the only available element of the equity compensation. Other studies in the UK context, carried out by Gregg et al. (2005), Gregg et al. (2012), Conyon and Peck (1998) find little evidence of the existence of a pay-performance relationship. However, these researchers employ only the cash element of CEO compensation. In an unpublished study, Gregg et al. (2005), analyses the pay-performance relationship for large UK companies from 1994 to 2002 by employing fixed effect regression method. Their study finds a weak significant relationship between compensation and total shareholder return while employing a single compensation measure as a sum of salary, bonus and pension. These results are consistent with agency theory and with those of Conyon and Peck (1998) and Conyon and Sadler (2001) which show a statistically weak relationship at the 10% level between pay and performance for UK companies. Gregg et al. (2012) investigate the impact of cash-plus-bonus on firm performance for financial and non-financial firms from 2007 to 2008 during the period

encompassing the global financial crisis. The authors also argue that although the level of CEO pay is higher in financial firms, there is no significant difference in pay-performance sensitivity for financial and non-financial firms.

Later on, Ozkan (2011) investigates the impact of previous year stock returns on CEO compensation from 1999 to 2005 by employing fixed effects regression model. The author uses cash compensation as a measure of salary and bonus and finds a positive significance only with the cash component of the compensation. The results also show significant evidence of the link between firm performance and total direct compensation (the sum of base salary, bonus, and granted value of LTIPs and options as their compensation measure). The author does not consider performance condition and vested value of LTIPs, having only made assumptions about the performance targets that ought to be achieved in the future.

Over time, the literature on executive compensation has sought to examine the impact of corporate governance characteristics on the level of compensation or controlling for corporate governance mechanisms. Among this latter group, key studies include Conyon (1997) that investigates the effect of corporate governance mechanisms on director compensation of 213 large UK firms between 1988 and 1993. The author employs chair duality and existence of remuneration committee as corporate governance variables and shows little evidence of the role of corporate governance mechanisms in shaping executive compensation. Sapp (2008) focuses on pay-performance relationship of top five executives for a set of 400 Canadian firms from 2000 to 2005, and finds out that the board of directors and different types of shareholders influence the level and the structure of the executive compensation, although the author does not find any evidence of relationship between compensation and most measures of firm performance.

More recently, Conyon (2014) studies the relationship between corporate governance mechanisms and executive compensation for S&P 500 and S&P Mid-Cap companies. The analysis shows that board of directors and remuneration committees are independent in the establishment of executive compensation packages. Concerning executive compensation, on an average, it is positively related to the size of the firm and company performance. The author states the option as the most widely used component of equity compensation. There has also been a shift from granting fixed elements of pay towards the granting of riskier elements of pay namely, performance-based/equity pay. Ozkan (2007) focuses on the UK market between the years 2007 and 2008 and investigates how the corporate governance characteristics, such as board size and institutional ownership, influence level of CEO compensation. The study finds that the board size is positively linked with the level of compensation, whereas the percentage of institutional ownership has a negative impact on the level of compensation.

Despite the widely-held perception on the disconnect between executive compensation and firm performance, until now in this regard, little attention has been paid in defining several measures of executive compensation and firm performance. As discussed earlier in Chapter 2, in the 1990s several reports such as Cadbury (1992) and Greenubry (1995) focus on attracting attention towards issues surrounding corporate governance and consequently have led to various reforms which have improved the transparency in the executive remuneration. Since then there has been an advancement in linking stock options or shares to performance targets. These incentive mechanisms have been implemented after decades of effort to bridge this disconnect.

Different from time conditioned share options, options which are contingent upon performance are also referred to as performance-vested stock options (PVSOs). The use of performance-vested stock options in compensation plans was initially supported by regulators and activist

shareholders. There has been disquiet concerning incentive effects of performance-vested stock options. Gerakos et al. (2005) argue that firms merely grant PVSOs to lessen investor's concern and that an adoption of PVSOs with achievable performance criteria will not deliver additional incentives. In contrast, as pointed out in its Global Best Practice 2006 for ''Corporate Performance Management'', PWC supports the use of the performance-vested equity grants in compensation contracts. Since the mid-2000s, the literature that has emerged includes in its investigations, whether the adoption of long-term incentive component is effective in aligning executives' interests and shareholder wealth, for example, as analysed by Buck et al. (2003) and Kuang and Qin (2009). Buck et al. (2003) show that the adoption of LTIPs reduces the pay-performance sensitivity, while Kuang and Qin (2009) analyze only PVSOs and document that its introduction strengthens the association between pay and performance in aligning executives' interests and shareholder wealth, for example, as analysed by Buck et al. (2003) and Kuang and Qin (2009). Buck et al. (2003) show that the adoption of LTIPs reduces the pay-performance sensitivity, while Kuang and Qin (2009) analyze only PVSOs and document that its introduction strengthens the association between pay and performance. The drawbacks of both the studies are that they only look at single components of equity compensation and use the performance period of one year, LTIPs, however, being three-year plans. The studies will be discussed in more depth in Section 4.2.

3.3.2 Discussions on Performance Choices in Compensation Contracts and Optimal Contracting

Agency theory has emerged as being very crucial to accounting and finance literature in the last thirty years and has been examined mainly to differentiate conflicts of interest and incentive problems. There exists a strand of literature that focuses on studying various aspects of the agency problem in executive compensation setting, amongst which is the use of accounting measures (Holmstorm, 1979, 1982).

Interestingly, agency theory does not specifically mention the selection of accounting or financial performance metrics in a compensation contract, but the theory can be employed to determine properties of accounting or finance variables for assessing the agent's performance. Among academics as well as in the corporate world, the relative merits on which market-based measure versus accounting measures are to be selected is still debatable. The greater prevalence of the use of stock prices as a market-based measure has been observed since the 1990s.

Initially, price-based measures are mainly used in incentive contracts and over time, firms have started to employ accounting based measures in compensation contracts. By way of illustration, Larcker (1983) finds that only twenty-five firms use accounting-based plans in CEO compensation contracts, while Kumar and Sopariwala (1992) find only sixty-two companies that incorporate plans with accounting performance conditions attached. Kaplan and Norton (1992) develop a non-financial measure technique known as a "balanced scorecard" in compensation contracts, which employs various performance measures with different relative weights, unlike the specific use of total shareholder return, return on investments or earnings. Later studies have charted the introduction of non-financial measures in bonus contracts, for example, customer service, production and safety (Ittner et al., 1997). One of the limitations of

their study was that they restrict their analysis to bonus contracts, thus, excluding the equity component which forms the major element of the compensation package.

Holmstorm (1979) proposes the "Informativeness principle" which states that any performance metric with high signal quality in revealing CEOs actions should be included in the compensation contract. In reality, if markets are efficient and firms have all the necessary information that is known to the market, the use of stock-based measure should be redundant in compensation contracts. This validates the property of optimal contracting framework. According to the informativeness principle, information on accounting earnings are not only useful because investors care about earnings but also because it improves contracting, as these reveal the actions of managers beyond what stocks measures fully capture.

Theoretically, accounting or even non-financial measures are mainly introduced to filter common noise in compensation contracts. For example, Ittner et al. (1997) have examined the adoption of financial or non-financial performance measures in bonus contracts of US firms. Their results show that the selection of non-financial measures is an increasing function of noise in financial performance measures. On the other hand, the most widely recognized reason that led to the use of earning metrics is that earnings reflect components which are under the direct control of the management (O'Byrne, 1990; Watts and Zimmerman, 1990).

Banker and Datar (1989) state that even if CEOs make decisions in the best interest of the firm, if the performance measure is noisy, it restricts the ability to have the same impact of what the performance measure should have been without the noise. Therefore, less weight placed on noisy performance measure will increase the strength and the value of an incentive contract. On the other hand, the lesser the noise is, the more accurate and consistent the performance measure becomes (Franco-Santos, 2007). Empirical studies test agency theory predictions in compensation contract by testing pay-performance sensitivity and relative noise between an

accounting or market-based measure. Sloan (1993) examines the role of accounting measures in salary and bonus components of the compensation and documents that the use of earnings in a compensation pay setting will tend to shield compensation from market fluctuations in stock prices. The author also suggests that if the stock price is a relatively noisy element, then compensation will be more sensitive to earnings than stock returns.

Lambert and Larcker (1987) investigate the relationship between pay and performance by applying agency framework and analyze whether accounting or market measures are considered to be more informative to shareholders. The results indicate that weight assigned between the market-based measure and accounting measure is a function of noise in these two performance measures, where the noisier the accounting based measure is, the lesser is the weight of the accounting measure. Additionally, growth firms tend to place more weight on market-based measures. For the measure of compensation, the author employs salary and bonus component which the authors believe to be 80 percent of the executive compensation. These studies note that both these performance measures are related to changes in CEO cash compensation only.

De Angelis and Grinstein (2015) provide the details of performance criteria in US equity-based grants for the year 2007 only. The research findings indicate that there exists significant variance in the choice of performance measures employed by firms and we can also infer from their empirical results that firms opt for performance measures which are more informative of CEO actions. Furthermore, growth firms and businesses with complex structure prefer to employ market-based measures over accounting-based measures.

Turning towards the choice of performance measure, so far in the UK context, there are three studies covering this aspect. Conyon et al. (2000) present a breakdown of performance measures linked to CEO stock options only. Their study ignores other components of equity compensation and does not give any details of performance targets. Whereas, Pass et al. (2000)

and Zakaria (2012) provide details of EPS and TSR performance targets. For EPS, they consider minimum performance threshold target only. While for TSR performance measure, they provide very little details of the relative benchmark to TSR and do not provide any details of threshold performance required. These studies also ignore the vesting criteria pertaining to these thresholds.

Firms are increasingly employing non-financial key performance indicators (KPIs) in their bonus contracts.[36] In addition to financial-based measures in LTIPs, some firms have also started to employ KPIs in these equity plans. Traditional performance measures such as TSR or EPS influences stockholders since they own companies' shares. KPIs such as employee health, safety and environment are very important for stakeholders over the long term since they are critical to the success of the organization and indicates whether or not the organization is on track towards its stated objectives.

3.3.3 Discussions on RPE-based Contracts

In devising compensation contracts, targets can be set in relative or absolute terms. Relative performance is measured against an externally-derived benchmark and absolute performance is measured on the basis of set internal standards. During performance benchmarking, if firms select absolute measures, this process can be classified as "fixed benchmarking" and requires little data. In contrast, relative benchmarking has greater data requirements as it involves appropriate peers to evaluate the relative performance of the company. Firms employ

[36] Hass et al. (2014), Measuring and rewarding performance: Theory and evidence in relationto executive compensation, *CFA Society 2014.*
https://secure.cfauk.org/assets/1298/Remuneration_Report.pdf
[accessed on May, 2018].

performance targets to assess agents' performance as they provide critical information concerning managers' behaviour and also grant rewards for higher firm performance.

As discussed earlier in Section 3.2.1, agency theory postulates that firms can strengthen the interest alignment between executives and shareholders by tightening the relation between executive compensation to firm performance. However, if the performance of the company is assumed to be influenced by external shocks, then it restricts the ability of CEOs to maximize shareholder wealth as firms are exposed to economy-wide shocks which CEOs cannot directly control. The contract may not be optimal if the performance of the company is correlated with either market or sector performance. Thus, the firms' use of absolute measure will merely compensate or penalize executives for general market-wide movements (Camara, 2001). Holmstrom (1982) proposes that an optimal compensation scheme would shield the manager against external shocks by measuring agent's performance relative to its peers. Therefore, the use of RPE protects from market-wide movements and exogenous shocks which influence the performance of the firm and its peers, thereby, strengthening the link between compensation and firm performance.

As discussed earlier in Section 2.1.4, Directors' Remuneration Report Regulation (DRRR) requires a detailed reporting on executive compensation matters. As part of this requirement, presently, firms disclose comprehensive information on executive compensation packages. Also, firms display peers selected for the purpose of performance benchmarking in their annual reports, reporting the returns on their own shares for the last five-year period, together with the comparative data on market and industry returns, over the same period.

In comparison to UK firms, since 2006, Security Exchange Commission (SEC) requires US firms to disclose the presence of RPE and peer choices in their annual reports. Before these disclosures, prior studies both in the UK and US detect the use of RPE by regressing executive

compensation against peer group performance. As an example, a pioneering study by Antle and Smith (1986) analyses US firms and infers the use of RPE indirectly from negative coefficient on peer performance while regressing executive compensation on both peer and firm performance by using an implicit approach. This negative coefficient on peer performance indicates that the remuneration committee filters market-wide performance wholly (or partly) out of executive compensation (Rajgopal et al., 2006). Gibbons and Murphy (1990) also show evidence supporting the presence of RPE with use of shareholder returns as a performance metric. The authors report that the changes in executive pay are more likely to be assessed relative to market movements instead of firm's industry. Studies on RPE use market peers to account for RPE use by performing implicit tests (e.g. Hall and Liebman, 1998; Garvey and Milbourn, 2003) and some use the implicit approach to detect RPE presence by employing industry peers (e.g. Janakiraman et al., 1992; Aggarwal and Samwick, 1999a; Garvey and Milbourn, 2006), while, some other studies employ both industry and market peers together (Aggarwal and Samwick, 1999b; Gibson and Murphy, 1990; Rajgopal et al. 2006). Of these studies, only Antle and Smith (1986), Gibbons and Murphy (1990), Janakiraman et al. (1992) and Rajgopal et al. (2006) find support for the presence of RPE in compensation contracts.

Albuquerque (2009) employs industry-size peers to measure peer performance and detects support for RPE use from the S&P 1500 firms. However, the author finds weaker evidence of RPE use when peer performance is based on peer groups from S&P 500 index and two digits SIC codes. One criticism of much of the literature on RPE, as also pointed by Dikolli et al. (2013), is that previous studies which test implicit RPE usage may have made measurement errors due to incorrect assumptions by selecting wrong peer groups for the detection of RPE or have shown biases in their selection of peer groups (e.g. industry or market peer groups). Since they use these various potential peer groups, instead of the actual peer groups which may differ in the detection of RPE, the results obtained from these implicit studies are still inconclusive.

Another major weakness of this approach is that it does not give an indication of percentage number of firms using relative performance and thus it remains unclear how many firms utilize RPE in the sample. Some of these studies use salary and bonus as a dependent variable (e.g. Barro and Barro, 1990; Janakiraman et al., 1992) in their analysis. This is clearly erroneous since firms mostly employ RPE in the equity component of the compensation.

Only a few studies undertaken previously focus on the explicit approach in detecting RPE, where regulatory filings are directly observed. Murphy (1999) analyses a sample of 177 large US firms contained in the survey by Towers Perrin in 1997 and documents that 28.8% of firms employ RPE in annual bonus contracts. In another study, Bannister and Newman (2003) examine 163 US firms in the Fortune 250 Index in 1992-1993 and indicate that the firms' use of RPE in compensation contracts is not widespread as only 45 firms out of 163 (28%) incorporate RPE based contracts. The authors also find that the use of RPE is positively associated with greater monitoring and stakeholder concern on executive pay and performance. Whereas, Gong et al. (2011) report greater frequency and indicate that 38% of the US S&P 1500 firms in 2006 employ RPE in compensation contracts. Carter et al. (2009) investigate the use of RPE in 129 UK firms in 2002 and report that around 50% of firms do not employ RPE in their performance-vested equity grants. Carter et al. (2009) and Gong et al. (2011), in addition to showing the percentage of firms that employ RPE using explicit approach, look at the determinants of firm's use of RPE and non-RPE. So far, these are the two main studies in the context of firm's use of RPE. However, in contrast to Gong et al. (2011), Carter et al. (2009) show little empirical evidence that the common shock plays a role in the decision to use RPE.

In a recent working paper, Black et al. (2016) use explicit disclosure to perform an implicit test to detect RPE for S&P 500 firms. They analyze the relationship between pay and firm performance and between pay and peer performance for a full sample, RPE sub-sample, and

non- RPE subsample by identifying implicit RPE using two-digit SIC peers, and industry/size quartile peers for the single year 2006. Their research findings show implicit evidence of RPE in RPE sub-sample using both peer groups. Their results also detect RPE presence in non-RPE firms using industry/size quartile peer groups only and argue that firms do not comply with the regulation in disclosing RPE. However, this is less of an issue in the context of UK firms since firms disclose the selection of RPE and comparator groups in their annual reports. After the introduction of mandatory SEC disclosure, the use of RPE has been investigated in several ways. In another working paper, Gao et al. (2017) investigate contractual features such as performance horizon and choice of multiple plans of S&P 500 industrial firms. Their study concludes that the selection of RPE and longer performance horizons can filter noise from market-based measures. In the US, the length of performance horizon varies in equity grants, however, in the UK, long-term incentives are usually three-year plans and their length does not vary. Thus, performance horizon does not impact the choice of RPE in UK compensation-setting.

Along with the decision to use RPE, the characteristics of RPE are also very important. One of the important characteristics is the selection of peer group in relative performance evaluation purposes, which has received less attention. Lewellen et al. (1996) investigate the influence of prior firm performance and corporate governance characteristics on the degree of bias in the selection of index and industry peer group for financial reporting practice. They conclude that industry and peer-company stock return benchmarks selected by the company are downward biased. In this way, the firm of interest can place themselves in higher percentile ranking, thus, indicating a bias in the peer selection process.

Besides, the risk sharing benefits from the adoption of RPE in compensation contracts, tournament theory postulates the potential benefits from the presence of RPE. The theory

further suggests that the selection of RPE peers should be such that RPE firms and peer firms should both have an equal probability to win, given equal levels of effort (Lazear and Rosen, 1981). If the selection of peers is inappropriate, it could result in diluting RPE benefits.

In order to shield executives from external shocks, the selection of peer group should be based on their ability to share greater common risk with the RPE firm. Gong et al. (2011) also analyse only those firms which select custom peer groups, therefore, ignoring firms which pick sector and index peers. To capture the common risk exposure of potential peers, their study looks at similarities in industry membership, index membership, and sub-index membership to that of an RPE firm. They do not take into consideration the performance criteria attached to these RPE plans in their analysis. The results of their study conclude that firms select RPE peers which belong from the Same_SIC2, S&P 1500 and have similar characteristics, which is in line with the efficient contracting theory. However, they also find evidence of self-selection bias as firms select such peers which have lower expected future stock returns.

3.3.4 Brief Reflection of the Relevant Literature

The literature review undertaken in previous sections displays that although there exists a body of literature on executive compensation, there are voids in the understanding of the design of long-term incentives and effectiveness of these incentive schemes in the UK.

Firstly, all the studies reviewed in the literature so far in examining the relationship between pay and performance have taken cash compensation, measured by the sum of salary and bonus, and the equity compensation as the prime measure of compensation in their investigations. In their valuation of equity compensation, these studies only include the granted value of equity as opposed to vested value. Thus, failing to consider the realized component of the

compensation. The equity grant is the maximum incentive opportunity (sometimes adjusting the probability of vesting), whereas, the vesting amount refers to the actual payout from equity-based pay which has been awarded to the executives after the attainment of performance criteria. It is impossible to estimate the true value of awards that will vest in the future. In the existing literature, only Conyon (2014) employs the vested value of equity grants in their empirical model to analyse US firms. Most of the research that we have discussed has only considered short-term performance in analyzing pay for performance relationship. Evidently, therefore, there is more scope in the UK to analyze the link between different elements of executive pay and measures of firm performance. Only limited studies extensively focus on LTIP plans, Buck et al. (2003) and Kuang and Qin (2009), which, however, yield inconclusive results to exhibit its effectiveness. This leaves an opportunity for potential research into whether adopting LTIPs in a compensation package align managerial and shareholder interests by strengthening the association between pay and performance across various settings.

Secondly, much of the extant literature investigates the impact of accounting or market-based measure on the relationship between pay and performance. These studies argue that firms should not select volatile performance measures since they make the relationship between pay and performance insensitive. However, the studies do not empirically test whether the volatility in accounting or market-based performance measures influences the selection of performance metrics. Additionally, concerning the choice of performance measures and their targets in long-term incentive plans, research in the UK has been thinner and more limited and has, to date, explored restricted datasets, with sample periods ending in 2003. Therefore, future research should concentrate on examining the design of compensation contracts in detail, including the vesting related to these performance targets.

Thirdly, based on the review of the literature, a handful of non-UK based studies are mostly derived from the US data to detect RPE using implicit techniques in compensation contracts. The mixed results and lack of empirical evidence for RPE use can be attributed to incorrect model assumptions and misspecification in the implicit approach. Only very recently, the mode of research on RPE has changed and started to examine the explicit use of RPE by using annual reports. Only two studies use explicit methods for US and UK firms which investigate the determinants of choice between RPE and non-RPE firms for a single year only. Consequently, more research is needed in the UK that accounts for explicit use of RPE by using a large dataset. Some recent studies use the explicit method to detect the implicit presence of RPE and others analyze a selection of individual firms who are selected to be in RPE pool. These studies employ the US dataset and are yet unpublished as they are quite current- 2016, 2017, suggesting that the literature on explicit RPE is still under research. Also, presently the characteristics of RPE are fully observable in annual reports and have advanced in the past few years. Yet, only limited studies thoroughly analyze RPE characteristics. Thus, future research should examine the characteristics of RPE and analyze their determinants. All these extensions will elaborate the understanding of executive compensation packages.

4 THE EFFECTIVENESS OF LONG-TERM INCENTIVES IN ALIGNING INTERESTS BETWEEN EXECUTIVES AND SHAREHOLDERS

4.1 Introduction

A vital role of corporate governance is to alleviate the misalignment of interests between executives and shareholders which mainly arise from the separation of ownership and control. Owing to corporate global scandals, such as Enron or WorldCom that have surfaced since 2001, the issue of executive compensation has been in the spotlight ever since. Media and politicians mostly tend to pay attention to higher levels of pay, while stakeholders of the firm and regulatory authorities tend to focus on whether compensation is sufficiently linked to executive performance (Alregab, 2016). There has been considerable reform initiatives which attempt to make the board more independent in their decision-making process. From the analysis of the reports in Section 2.1, these reform initiatives suggest that institutional owners should have control over matters related to executive compensation.

Further, we reviewed the Greenbury Report (1995) in Section 2.1.2, which suggested that firms should employ performance contingent long-term incentive plans for their executives. However, the enforcement of Directors' Remuneration Report Regulations (DRRR) in 2002 aim towards enhancing transparency and disclosure on fixed and variable components of compensation. Therefore, this disclosure provides an opportunity for researchers to conduct analysis on features of long-term incentive arrangements for UK firms. It also helps public and investors to understand the various components of executive compensation packages.

As discussed in Section 2.2, long-term incentive plans usually consist of performance share plans, share options, and share matching plans. These shares vest only after performance criteria are met over a period of time. Vesting time is referred to as the time before restrictions are lifted on the ownership of stocks or options. Vesting of these shares is not contingent upon the time

lapsed for UK firms; in comparison, however, a greater number of US firms still grant incentives which are conditional upon the time lapsed. Moreover, UK firms have adopted long-term incentive schemes much before the US firms and the vesting of shares occurs only after three years, once the plan has been devised (Tower Perrin, 2005).

The grant of long-term incentives serve two objectives: firstly, it ensures that the interest of executives and firm's shareholders are aligned. Secondly, it encourages executives to maximize their effort and enhance shareholder wealth (Pepper et al., 2013). The key metric which influences the outcome is pay-performance sensitivity. It measures the degree of interest alignment between executives and shareholders (Jensen and Murphy, 1990; Firth et al., 2007). Pepper et al. (2013) also report that LTIP accounts for around 38% and 33% of total earnings of executives in the FTSE 100 and FTSE mid-250, respectively. This suggests that the introduction of LTIPs in compensation packages has become more prevalent. Despite this popularity, there has been disquiet among multi-institutions on how successful LTIPs actually are in achieving these two objectives and their benefits. This disquiet has been reinstated in the academic enquiry by Buck et al. (2003). A greater focus on linking equity-based pay to firm performance has resulted in the innovation of the design of LTIPs which has eventually led to greater variations in compensation practices (Bruce et al., 2005). Though, how effective the introduction of these long-term incentive schemes has been, is an issue which is yet to be explored.

In prior literature, greater focus has been given to compensation of CEO. The main reason behind it is that CEO equity incentives are much bigger than that of CFO. Considering the fact that CFO acts as an agent of CEO, it would be interesting to analyse how the pay-performance relationship holds for CFO. A greater grant of number and value of long-term incentive plans tend to engage CEO in riskier business projects in order to achieve a higher level of

compensation which is more than that of CFO, thus, leading CEO to be less risk-averse than CFO. Although the value of performance-based shares awarded to CEO and CFO within the same company differs, the performance criteria on which these shares vest remain similar, making it interesting to investigate pay for performance association for both CEO and CFO.

Our study analyses a sample of 237 non-financial firms of UK FTSE 350 Index from 2010 until 2014 (excluding financial services and investment trusts). The broad conclusions of the study are as follows: firstly, the level of executive compensation has increased significantly between 2010 and 2014 for both CEOs and CFOs. Secondly, the structure of executive compensation has also changed; whereby a shift in the landscape of executive compensation from granting base pay towards granting of stock options and performance share plans has been noticed. The results show that there exists a positive link between previous year's total shareholder return and different components of CEO pay except for equity pay. The findings are similar in the case of CFO as well. However, there exists a positive link between all components of CEO/CFO pay and long-term firm performance.

This chapter makes several contributions. It is the first in investigating pay-performance relationship for CFOs. Additionally, we contribute to the literature by making a clear distinction between different measures of firm performance and executive compensation (realized pay, equity pay, and total remuneration) in ways that existing studies have not considered as yet. Finally, we examine the impact of various numbers and amount of LTIPs granted on the pay-performance relationship. To date, there is no concrete evidence provided in the previous literature towards examining the pay-performance sensitivity of different LTIPs.

The rest of the chapter is organised as follows: in Section 4.2, literature is reviewed and hypotheses are proposed. In Section 4.3, the impacts of corporate governance and control variables are studied. Section 4.4 introduces the methodology and Section 4.5 illustrates the

data and sample statistics, Section 4.6 focuses on empirical results while Section 4.7 shows the results of the robustness tests undertaken. Finally, Section 4.8 provides the conclusion and implication of the results derived.

4.2 Related Literature and Development of the Hypotheses

As reviewed in Section 3.2.1, two broadly competing models, the managerial power theory and the agency theory are used to examine executive compensation results. In keeping with the agency theory, Jensen and Meckling (1976) advocate that executives' reward structure should be constructed in such a way that it is positively associated with firm performance. However, it is also noted that this positive association is not always achievable due to the problems arising as part of the conflicts in the interests that separate the ownership and control in the company (Conyon et al., 2000).

Managerial power theory challenges the agency theory perspective by asserting that the executives occupy the most powerful position in a company and this provides sufficient discretion to set contractual terms without intervention and generates generous pay schemes (Bebchuk et al., 2002). Further on, Bebchuk and Fried (2005) argue that the building block of managerial power approach is the "pay camouflage", where pay packages are constructed in such ways that appear to be complex and opaque, therefore making these packages different from the optimal contracting view of the agency theory. Agency theory stresses the need for the agents to maximise shareholder wealth in order to achieve higher rewards.

Based on the above argument, the following hypotheses shall be tested:

Hypothesis 4.1: A higher level of company performance positively affects CEO/CFO compensation.

Turning towards long-term incentives, their stated purpose is to prevent executives from getting undeserved profits and to influence managers to make decisions that are in the best interest of the shareholders. One of the first research studies in analysing long-term incentive plans has been carried out by Buck et al. (2003). The authors analyse how the use of LTIPs in a compensation package influence the pay-performance sensitivity for UK firms from 1997 to 1998. The results of their study indicate that firms which employ LTIPs award higher absolute pay to executives, while pay-performance sensitivity reduces in comparison to firms which do not award LTIPs. LTIPs are three-year plans and were introduced in 1995, but the sample analysed by Buck et al. (2003) was from 1996 and employ one-year performance. These are the shortcomings of their study. The authors also state that in isolation, LTIPs have a mechanical relation with performance conditions attached to the company's share price.

Kuang and Qin (2009) study whether traditional or performance-vested stock options lead to greater interest alignment with shareholders by increasing their wealth for UK firms. They consider only stock option as an element of equity compensation and their results show that pay-performance sensitivity increases with the use of performance-vested stock options over traditional time-based options. Similar to Buck et al. (2003), the limitation of this study is that they fail to consider three-year performance in examining the pay-performance sensitivity. On the other hand, Cao and Halloran (2012) explore whether Irish companies which adopt LTIPs perform better than others. The authors find no evidence of a relationship between the adoption of LTIPs and firm performance.

Presently, equity grants have performance conditions attached to them and these designs vary depending upon the objectives of the company. If LTIPs consist of multiple performance measures, it is difficult to assess how challenging these performance measures are. Opponents of the use of LTIPs argue that complex designs make them difficult to understand as

performance conditions are either too demanding or undemanding. In this present study, we take into account all the components of long-term incentive plans (options, performance share plans, matching plans and others) in our analysis. In the past, most researchers like Buck et al. (2003) employed the expected or granted value of long-term incentive plans in their equity valuation. We include the actual vested value (also called, payout) from share options, performance shares, and matching plans in our study which will be discussed in Section 4.4.1.

Next, the focus will be on the complexity in the design of executive compensation contracts. For example, in 2010 Reed Elsevier operates four long-term incentive plans with performance conditions that have different vesting scales attached to them. LTIPs awarded by them, as usual, vest after three years and include one performance share plan, one share option plan and one matching plan.

For the matching plan, namely, the Reed Elsevier Growth Plan, each performance measure- EPS, TSR, and return on invested capital (ROIC)- vests on one-third of the total after attainment of performance targets. For TSR, due to the global nature of Reed Elsevier's business, a comparator group from different relative market indices (FTSE 100 for Sterling, Euro next for Euro and S&P 100 for U.S Dollar Comparator Group) has been included. TSR performance of Reed Elsevier should be above the median performance in order to trigger a minimum reward that will result in 30% of the equity vesting. In order for the executives to achieve the maximum reward of a 100%, TSR performance should be in the upper quartile, relative to the comparator group of companies as defined above. When shares vest, the restrictions are lifted on executives' ownership. However, the minimum threshold target for EPS absolute growth is 5% and for ROIC is 10%, while maximum threshold targets are 9% for EPS absolute growth and 11% for ROIC.

For the share option plan to vest, the adjusted EPS growth should be between 6% for minimum threshold and 8% for the maximum threshold. Nonetheless, for both the plans discussed above, there is a straight line vesting between these minimum and maximum thresholds which depend on the level of growth. Lastly, for the LTIP plan, the performance condition puts an equal proportion on EPS and TSR. TSR is benchmarked relative to Eurozone and S&P 100 comparator groups and EPS has a similar condition to that of share options. Considering the various equity plans, comparator groups and performance measures, the design of compensation packages of Reed Elsevier becomes more complex in nature.

Since LTIPs are three-year plans, it would be reasonable to consider a performance of three years which would reflect a more robust picture of pay for performance relationship. There exists the possibility that the firm which operates a greater number of components in the LTIPs has performance targets that might not be based solely on increasing shareholder value.

In the past, managers have received higher rewards with minimal effort but with an adoption of long-term incentives, more effort is required to achieve higher compensation, else the performance targets will be missed. This practice is in line with agency theory as it aligns the interests of executives with that of shareholders (Kuang and Qin, 2009). So, the firms which grant a greater number of LTIPs achieving these performance targets will result in a higher compensation than the firms which grant a lesser number of LTIPs.

Additionally, Cao and O'Halloran (2012) argue that LTIPs could also provide opportunities to tilt the compensation package in the executives' favour which may lead to managerial rent extraction. Also, the company which grants greater value of equity compensation to their executives reflects an influence of CEO power over the pay setting process. Therefore, such schemes may be used to camouflage CEO power from public scrutiny over the design of compensation contract (Gerakos et al., 2005).

Buck et al. (2003) document that the presence of LTIP award in a compensation package reduces the pay-performance sensitivity. This raises a doubt about the effectiveness of long-term incentives and motivates us to investigate whether the presence of various long-term incentive plans influences the pay-performance responsiveness. Pay-performance responsiveness measures the percentage responsiveness of pay to a percentage change in performance. LTIPs are granted to solve agency problems and within LTIPs, if an increase in shareholder wealth leads to an increase in compensation, it solves the agency problem. The presence of a negative or insignificant relationship will show that managers use incentives in their own favour, implying the prevalence of managerial power perspective. Overall, this makes it interesting to analyse how LTIPs influence the pay-performance sensitivity.

Based on the discussion above, the acceptance of hypothesis 4.2 will be consistent with the principal-agent theory.

Hypothesis 4.2: The greater the number of long-term incentive components granted to executives in a compensation package, the stronger the pay-TSR performance responsiveness.

There has been a decrease in the use of share options since the mid-2000s. The current practice is for firms instead to grant performance share plans in their compensation contracts (Main, 2010; Conyon et al., 2010). As can be seen from the descriptive statistics of Zakaria (2012), both options and PSPs employ a mix of EPS and TSR as the performance measure. However, TSR is more popular among PSPs. Thus, the inclusion of performance share plans can lead to greater pay-performance responsiveness than it would for share options.

Hypothesis 4.3: Interest alignment is higher for the use of performance share plans than for stock options.

4.3 Effects of Corporate Governance and Control Variables on the Level of Compensation

In this section, we also control for and are interested in examining the corporate governance mechanisms to analyze whether they have explanatory power in explaining the level of compensation. According to prior literature, weaker corporate governance mechanisms have an influence on the magnitude and the composition of executive compensation (Sigler, 2011).

Following Sapp (2008) and Ozkan (2011), in terms of corporate governance controls, we use the following variables- board size, non-executive directors, chair duality and institutional ownership.

Board Size

Prior empirical studies document that the size of the board impacts its ability to control and monitor the firm activities (Sigler, 2011). Yermack (1996) argues that smaller boards are considered to be effective than boards with a greater number of directors. Smaller boards process information quicker and enhance communication level among top management and executives in a firm (Zahra et al., 2000).

Previous studies show a positive association between board size and CEO compensation (e.g. Guest, 2010; Renneboog and Trojanowski, 2010). This association can be explained from large boards that do not play an effective role, thereby hindering efficient monitoring, communication and decision making which results in greater CEO compensation. On the other side, it has been argued that large boards are valuable since it brings on board the expertise and knowledge of the board members. Also, there exists literature which finds negative or no effect of board size on the level of compensation. For example, Firth et al. (2007) show that there exists a negative relationship between board size and compensation. Another strand of studies indicates the

positive impact of board size on one of the important components of compensation, namely, equity compensation (Mehran, 1995; Core et al. 1999; Ryan and Wiggins, 2001).

Chair Duality

Traditionally, both in the US and in the UK, it was common for CEOs to be also the chairman of the board. Core et al. (1999) argue that CEO-chair duality enhances greater executive control in determining the level and the structure of their executive compensation. In this context, previous studies show mixed results. The findings from the studies by Conyon (1997) and Conyon and Peck (1998) indicate that there is no significant association between chair duality and managerial compensation. Whereas, Brick et al. (2006) conclude that firms where CEOs is also chairman of the board, they receive greater total compensation.

Non-executive directors

Although non-executive directors are part of the board, they do not have any active involvement in the day to day operations of the business. However, they are considered to play an effective role in monitoring activities of the company to protect shareholders' interests and solve agency problems. Concerning empirical evidence, however, literature does not provide us with a consistent conclusion on whether a greater percentage of non-executives on the board influences the levels of compensation. For example, Sapp (2008), Fahlenbrach (2009) and Guest (2010) find a negative association between non-executive directors and the level of executive compensation. Similarly, Mehran (1995) indicates that boards with greater percentage of non-executive directors are awarded a lesser cash compensation but a greater equity compensation. This result suggests that non-executives provide a monitoring role by awarding greater equity compensation as it aligns the interests of shareholders with those of managers. Conversely, the results of Ozkan (2007) and Franks et al. (2001) indicate that there

is an insignificant association between percentage of non-executive directors and cash compensation, signifying non-executive directors do not provide an effective monitoring role.

CEO/ CFO Age and Tenure

CEO tenure is the number of years they have served in the company. Hill and Phan (1991) argue that the longer CEO tenure is, the more they get paid. Also, Janakiraman et al. (2010) and Allgood et al. (2012) find a positive association between tenure and compensation. The latter suggests that this positive association reflects CEO entrenchment. CEO tends to gain more power as their tenure in the company lengthens which also results in their ability to influence the pay setting process. Devers et al. (2007) suggest that age is an important proxy for experience and is directly associated with CEO compensation. Watson (1994) finds age to be a significant determinant for CEO compensation in non-financial firms.

Ownership structure

In prior literature, for ownership structure, the researchers tend to employ shares owned by institutional investor as a proxy. The presence of institutional owners is believed to be vital to corporate governance practices in terms of the level as well as the structure of executive compensation (Ozkan, 2011). They are considered to be effective monitors due to their greater ownership within the company. Following Hartzell and Starks (2003) and Sapp (2008), this variable is used as one of the indicators of corporate governance quality.

Firm Size

Firm size has received greater attention in the literature on executive compensation. As firm size increases, the complexity of the organization also increases. Due to a competitive labour market for executives, this enables the large firms to attract more talented CEOs to be employed (Conyon, 1997). Also, the results from the empirical studies by Kuang and Qin (2009), Guest

(2010) and Gregg et al. (2012) indicate that firm size is an important determinant in explaining executive compensation. Previous studies employ market capitalization as a proxy for firm size (Hartzell and Starks, 2003; Kuang and Qin, 2009; Armstrong et al., 2010).

4.3.1 Variables

Compensation Variables

In our study, we employ several different measures of executive compensation. Base pay is the fixed amount received for the financial year. Bonus is the amount paid for the financial year inclusive of any deferred element (provided there is no performance requirement on release) and is paid in either cash or shares. Total short-term pay includes base salary and annual bonus amount. Equity compensation or long-term performance-based pay is measured as the granted value of performance shares, option grants, granted value of matching plans, vested value of performance share plans, exercised value of options, and vested value of matching plans. Total remuneration includes total cash plus the granted value of long-term incentives for that financial year.

Total realized pay is a measure of the sum of base pay, bonus and the vested value of long-term incentives (options, performance share plans, matching plans and others that are vested for the financial year). In MEIS' database, the granted value of stock options is valued at 25% of the exercise value. This method is also followed by (Core et al., 1999; Berrone and Gomez-Mejia, 2009). Berrone and Gomez-Mejia (2009) study option valuation using the Black-Scholes method and the method described above shows a positive correlation of 0.97, as also observed by previous researchers (Lambert et al., 1993; Finkelstein and Boyd, 1998). Berrone and Gomez-Mejia (2009) show almost identical results while using two different estimation techniques. The granted amount of PSPs is valued at the 50% of the exercise value. However,

the vested values of share options and PSPs are the actual shares figures which have been exercised or given to executives after the actual attainment of the performance conditions.

Performance Variables

We employ market-based measure to investigate the relationship between compensation and firm performance. For this, we analyse both long-term and short-term stock returns; we measure long-term stock returns as previous three-year returns to shareholders from Datastream Return Index, which includes dividend reinvested, provided by Datastream. However, for short-term performance, it is the previous one-year return (Jensen and Murphy, 1990; Conyon and Sadler, 2001). The performance variable is lagged one year as compensation will be influenced by the performance of the previous year (Ozkan, 2011; Jensen and Murphy, 1990).

In our model, we also consider a three-year shareholder return to analyse its impact on the level of equity pay, total remuneration, and total realized. The objective of this study is to shed light on the relationship between CEO/CFO compensation and firm's short term and long-term performance for FTSE 350 UK companies.

Plan Types

Long-term incentives are awarded in different forms such as share options, matching plans, performance share plans, etc. For a plan, specific dummy, we exclude short-term incentive plans or bonuses, since they are not categorized as long-term plans. We also exclude one-off LTIPs, for example, turnaround plans, acquisition plans, retention plans and plans for the recruitment purpose. Rarely, firms offer five-year plans that are initially for three years, but once the three years have lapsed, the LTIP can be further extended to another two years. However, these have been excluded from our sample as they do not reflect the value of compensation awarded because of the tenure of these plans. We also eliminate firms which do

not provide sufficient information on long-term incentive plans. Lastly, for the purpose of this study, companies which grant shares with zero exercise price are labelled under the "share options" category in annual reports. Similar to Zakaria (2012), we too classify them under performance share plans category.

Control Variables

As discussed earlier, corporate governance variables used in this study consist of the sum of the top 4 institutional ownership, which is the number of institutional shareholders who own more than 5% of the company's common shares. CEO chair duality is when the CEO is also the chairman of the board. Board size is the number of directors on the board. The percentage of non-executives is the total number of non-executive members on the board. Lastly, firm size is measured by market capitalization (Kuang and Qin, 2009).

4.3.2 Model Estimation

To explore the link between compensation and performance, we use multivariate analysis after controlling for corporate governance mechanisms and firm-specific variables. Firstly, we test the association between the level of compensation and short-term firm performance. The link between compensation and long-term firm performance is also studied. Subsequently, we examine the impact of different number of LTIPs on pay-performance responsiveness. Finally, we explore the pay-performance responsiveness in different types of plans. Following Murphy (1999) and Gregg et al. (2012), we take a log for the compensation variable which is our dependent variable, since it helps us to interpret the pay-performance elasticity.

We estimate the following model in order to investigate how firm performance influences the level of compensation and can be expressed as follows:

Model 1

$$Ln\,(Compensation)_{i,t} =$$

$$\alpha + \beta_1\ Firm\ Performance_{\,i,t-1\to t} + \sum_{j=1}^{p} y_j\ corporate\ governance\ variable_{\,i,t-1} +$$

$$n\ control\ variable_{\,i,t-1} + \varepsilon_{\,i,t} \quad (4.1)$$

i is the transcript for the firms while *t* is for the time period. *εit* is the error term and the dependent variable "Compensation" consists of total short-term pay, equity pay, realized pay and total pay.

The coefficient of firm performance (β_1) measures the pay performance elasticity. From an agency perspective, a higher level of company performance is positively associated with future pay. So, we expect the coefficient of firm performance to be positive and significant.

Model 2

$$Ln\,(Compensation)_{i,t} = \alpha + \delta_1 firm\ performance(TSR)_{i,t-3\to t} + B_1\ dummy\ plan\ 1_{\,i,t-3} +$$

$$B_2\ dummy\ plan\ 2_{\,i,t-3} + B_3\ dummy\ plan\ 3_{\,i,t-3} + B_4\ dummy\ plan\ 4_{\,i,t-3} +$$

$$B_5\ dummy\ plan\ 1_{\,i,t-3} TSR_{\,i,t-3\to t} + B_6\ dummy\ plan\ 2_{\,i,t-3} TSR_{\,i,t-3\to t} +$$

$$B_7\ dummy\ plan\ 3_{\,i,t-3} TSR_{\,i,t-3\to t} + B_8\ dummy\ plan\ 4_{\,i,t-3} TSR_{\,i,t-3\to t} +$$

$$\sum_{j=1}^{p} y_j\ corporate\ governance\ variable_{\,i,t-1} + n\ control\ variable_{\,i,t-1} + \varepsilon_{\,i,t} \quad (1.2)$$

εit is the error term and the dependent variable "Compensation" consists of total remuneration, total realized pay, and long-term pay. Since long-term incentives are three-year plans, we use 3-year lag for a number of long-term incentives granted by the company. For example, any LTIP award granted in 2007 will only vest in 2010.

To investigate pay performance responsiveness within the different number of plans, initially, we assign dummies to represent the different numbers of long-term incentives granted by the company since there are many different performance conditions and criteria as shown in model

1.2. Including these dummies will give an indication whether there are different pay levels within different long-term incentive plans. To test the existence of pay-performance responsiveness, we create four dummy interaction variables between each LTIP plan and three-year shareholder returns. Lastly, we also investigate the incentive strength within different number of long-term incentives by taking the natural logarithm of value of long-term incentives granted. A higher positive value corresponds to greater importance of amount awarded to CEO/CFO.

The regression model can be expressed as follows:

Model 3

$$Ln\,(Compensation)_{i,t} = \alpha + \delta_1\, firm\, performance\,(TSR)_{i,t-3\to t} + B_2\, dummy\, plan\, PSP_{\,i,t-3} + B_3\, dummy\, plan\, Option_{\,i,t-3} + B_4\, dummy\, plan\, PSP_{\,i,t-3} TSR_{\,i,t-3\to t} + B_5\, dummy\, plan\, Option_{\,i,t-3} TSR_{\,i,t-3\to t} + \sum_{j=1}^{p} \gamma_j\, corporate\, governance\, variable_{\,i,t-1} + n\ control\ variable + \varepsilon_{\,i,t} \quad (1.3)$$

Lastly, to test the existence of pay-performance responsiveness within the type of plans, in Model 2, we replace the dummy number plans with dummy type plans. Therefore, "Dummy plan PSP" is defined as 1 if the company grants only performance share plans in their compensation contract and zero-otherwise. The dummy for option is also constructed in a similar way. Also, we create a dummy interaction between each type of plan and three-year shareholder return. Our alternative hypothesis predicts that higher pay-performance responsiveness is associated with the use of PSPs rather than for options. As seen in the study by Zakaria (2012), PSPs mostly have TSR performance condition attached to them in comparison to share options. The use of PSP could be employed as a proxy for presence of TSR based contracts. Thus, expecting to have a positive pay-performance responsiveness.

Following previous studies on CEO compensation, we include firm and time fixed effects. In our estimation, standard errors are robust to clustering at the firm level. In the strand of corporate governance literature (e.g. executive compensation models), there are concerns over endogeneity, so by taking lags of the explanatory variable, this problem in the regression models can be minimized (Hartzell and Starks, 2003). Some researchers argue that not only performance influences compensation but also the compensation is a motivating factor for the executive to perform in the future. So, there is a two-way relationship between compensation and performance; however, as we consider one year lag for the performance measures we can minimize this issue.

4.4 Data

4.4.1 Data Sources and Sample Construction

The initial sample of executive compensation consists of 237 firms of UK FTSE 350 Index from 2010 to 2014 (excluding firms from financial services and investment trusts). Additionally, to be included in a regression, a firm must have valid data on total shareholder return for three years- i.e. if the LTIP plan has been implemented in 2007, then we consider firm performance from 2007 to 2010, as that effects the compensation/LTIP vested value for the year 2010. Similarly, for LTIP awarded in 2008, we consider the performance from 2008 to 2011 and so on, each year after plan implementation until 2011. Thus, we consider three-year performance and valid data on corporate governance variables in our analysis, therefore, resulting in the final sample to be reduced and unbalanced with 225 firms for the CEOs and 223 firms for the CFOs.

The data used in this study has been gathered from various sources. For instance, compensation data for the CEO and CFO have been taken from MEIS database and supplemented with

manually collected data, where information was unavailable on the MEIS database from annual reports. Information, concerning the numbers, types, and value of LTIPs granted by firms from 2007 to 2011 and whether these granted LTIPs were active in each of these years, has been hand-collected from the firms' annual reports. The data on institutional ownership has been collected from Fame. Similar to Ozkan (2011), institutional ownership is measured as the sum of holdings of the top four institutional investors. Data for board size and chair duality has been collected from Bloomberg database. However, we obtained stock price and other financial data from Datastream based upon their FY values. Following Hartzell and Starks (2003) and Ozkan (2011), we use Datastream's Total Return Index which reflects a stock's growth in value assuming all dividends are re-invested.

4.4.2 Sample Statistics

Panel A of Table 4.1 presents the trends in the level of components of CEO compensation. The mean and the median value of CEO base salary increase from 2010 until 2014. On the other hand, the mean CEO short-term pay increases from £1,207,600 in 2010 to £1,347,542 in 2014 and the total compensation from £1,845,479 in 2010 to £2,439,548 in 2014. The average value of equity pay increases from £939,460 in 2010 to £1,432,964 in 2014. Furthermore, the largest increase is in the average value of realized pay from £1,296,123 in 2010 to £2,038,142 in 2014. A possible explanation for this might be that over time firms have started to achieve the performance goals as specified in their compensation contracts.

Panel B of Table 4.1 shows different components of CFO compensation from 2010 to 2014. We observe an increase in the mean and median values of CFO base pay. For the CFO, the largest increase has been in the average and median value of total compensation from £1,062,704 (£900,652) to £1,583,531 (£1,328,896). For realized pay, in our sample period, the

average value increases from £786,214 to £1,273,896. Also, there is a small increase in short-term pay from £705,703 to £719,382. We also observe that mean and median value for CFO age increases from 50 to 51 from 2010 until 2014, while an average value for CFO tenure is more or less 6 years.

Panel C of Table 4.1 reports descriptive statistics for components of CEO and CFO compensation within different numbers of long-term incentives awarded by the company. As shown in the table, firms which operate multiple long-term incentives differ significantly in the ways they compensate their CEOs and CFOs. The average value of CEO (and CFO) total pay increases from £1,941,436 (£1,193,436) to £6,997,678 (£3,119,818). It is noted that the companies which operate two, three or four long-term incentives award higher realized pay by 15%, 29% and 34%, respectively.

Panel E of Table 4.1 shows descriptive statistics for board size, the sum of top 4 institutional ownerships, age and tenure of the CEO. As can be seen from the table, the median value for board size is 9 and the mean value is close to 9 for each year which is consistent with Ozkan (2007). However, there is not much variation in the average institutional ownership during our sample period. The average age of CEO is around 52 and CFO is around 50. While, on an average, for our sample period, the tenure of CEO is more or less 7 years, whereas, the average tenure of CFO is around 6 years. Finally, the average % of non-executive directors range from 55.5% to 57.3%.

Panel F of Table 4.1 reports that the mean value of three years TSR varies for our sample period and the mean ranging from 0.21 to 0.63 but there exists less variation in one year TSR of the company.

In Panel G of Table 4.1, we discuss correlation matrix of main independent variables used in the regression. The correlation between market capitalization and board size is only 35%.

Turning towards other control variables, we find very low correlations (Panel G of Table 4.1). Furthermore, we present an evaluation of the variance inflation factor (VIF) in Panel H of Table 4.1. Multicollinearity is not likely to be a problem in our multivariate test because no VIF exceeds 10 for any of our independent variables (e.g. Hair et al., 2006)

Table 4.1

Panel A: The descriptive statistics of components of CEO Compensation (Pounds)

Variable	2010	2011	2012	2013	2014
Base Salary (£)					
Mean	563,267	575,212	595,045	584,643	604,158
Median	522,800	517,566	533,000	527,000	543,000
Bonus (£)					
Mean	718,380	645,366	630,705	636,725	634,893
Median	500,000	501,404	433,500	465,500	604,158
Short Term Pay (£)					
Mean	1,207,600	1,158,252	1,255,178	1,309,722	1,347,542
Median	1,000,000	1,040,920	1,113,500	1,157,000	1,293,018
Equity Pay (£)					
Mean	939,460	1,180,521	1,696,440	1,642,955	1,432,964
Median	516,978	752,243	968,292	1,023,114	1,047,638
Realized Pay (£)					
Mean	1,296,123	1,635,151	2,018,496	2,037,154	2,038,142
Median	1,100,000	1,266,373	1,418,752	1,494,677	1,523,211
Total Pay (£)					
Mean	1,845,479	2,173,139	2,686,979	2,655,696	2,439,458
Median	1,374,000	1,655,023	1,986,252	2,089,531	2,040,137

Table 4.1

Panel B: The descriptive statistics of components of CFO Compensation (Pounds)

Variable	2010	2011	2012	2013	2014
Base Salary (£)					
Mean	363,119	373,576	374,442	381,408	401,521
Median	326,000	340,000	344,000	357,500	386,110
Bonus (£)					
Mean	346,617	373,576	317,319	322,954	317,861
Median	292,500	305,206	253,000	289,720	308,000
Short Term Pay (£)					
Mean	705,703	735,885	690,134	693,374	719,382
Median	617,000	655,495	594,463	630,000	710,666
Equity Pay (£)					
Mean	487,996	584,921	829,249	833,773	860,031
Median	303,211	310,287	471,920	529,998	639,226
Realized Pay (£)					
Mean	786,214	1,010,051	1,196,986	1,128,793	1,273,896
Median	659,213	803,169	819,501	872,200	941,000
Total Pay (£)					
Mean	1,062,704	1,386,209	1,570,582	1,529,118	1,583,531
Median	900,652	1,122,222	1,138,190	1,234,998	1,328,986

Table 4.1

Panel C: CEO and CFO compensation within different number of long-term incentives awarded (Pounds)

Variable	Plan 1	Plan 2	Plan 3	Plan 4
Base Salary (£)				
CEO	556,073	607,549	714,061	981,833
CFO	360,338	394,226	455,840	581,500
Bonus (£)				
CEO	519,586	632,625	850,420	988,500
CFO	307,203	355,628	403,913	608,155
Short Term Pay (£)				
CEO	1,077,753	1,231,929	1,506,773	1,970,333
CFO	649,220	745,138	859,392	976,440
Equity Pay (£)				
CEO	1,068,767	1,784,975	2,736,854	5,027,344
CFO	599,298	822,616	1,840,030	2,192,858
Realized Pay (£)				
CEO	1,448,453	2,215,911	3,628,373	5,237,313
CFO	889,541	1,149,597	2,113,304	2,938,108
Total Pay (£)				
CEO	1,941,436	2,985,804	4,822,604	6,997,678
CFO	1,193,436	1,582,395	2,076,290	3,199,818

Table 4.1

Panel D: Descriptive statistics on average number of active long-term incentive plans granted three-years before the compensation is awarded

	2007	2008	2009	2010	2011
No. of active LTIP plans	1.69	1.78	1.86	1.97	1.9

Table 4.1

Panel E: The descriptive statistics of board size, % of 4 largest institutional ownership, % of non-executive directors, market capitalization, CEO/CFO age, and CEO/CFO tenure

Variable		2010	2011	2012	2013	2014
Board_size	Mean	8.9	8.9	9.1	9.1	8.8
	Median	9.0	9.0	9.0	9.0	9.0
4_largest_institutional %	Mean	31.6	30.3	31.6	31.6	29.1
	Median	28.3	27.9	28.1	28.1	26.6
Market_cap	Mean	20.9	21.1	21.3	21.5	21.6
	Median	20.8	20.9	21.1	21.3	21.4
Non_exec %	Mean	55.5	55.8	56.2	57.1	57.3
	Median	55.2	55.6	56.2	57.0	57.2
CEO Age	Mean	51.8	51.7	52.4	52.4	52.7
	Median	51.5	51.0	52.0	53.0	52.0
CEO Tenure	Mean	7.1	7.1	7.5	7.3	6.7
	Median	6.0	5.0	6.0	6.0	6.0
CFO Age	Mean	49.0	48.8	49.2	49.7	50.8
	Median	48.0	49.0	49.0	50.0	51.0
CFO Tenure	Mean	5.0	5.7	6.0	6.3	6.6
	Median	5.8	5.0	5.0	5.0	5.0

Table 4.1

Panel F: The descriptive statistics of financial performance of the firm

Variable		2010	2011	2012	2013	2014
TSR (1 year)	Mean	0.37	0.07	0.21	0.33	0.27
	Median	0.30	0.04	0.21	0.29	0.26
TSR (3 year)	Mean	0.21	0.87	0.74	0.76	0.63
	Median	0.11	0.51	0.63	0.65	0.57

Table 4.1

Panel G: Correlation Matrix of Main Independent Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Age	1							
(2) Tenure	0.29***	1						
(3) CEO_chair_dual	0.07**	0.07**	1					
(4) Board_size	0.07**	-0.08**	0.00	1				
(5) Non_exec %	-0.02	-0.10***	0.02	-0.10***	1			
(6) 4_larget_institutional %	0.02	0.11***	0.02	-0.08**	-0.05	1		
(7) Market_cap	0.09***	-0.15***	0.06	0.35***	0.15* **	-0.19***	1	
(8) TSR	0.01	0.06*	-0.03	-0.05**	-0.01	0.10***	0.02	1

Panel G reports the correlation matrix of the main independent variables. ***, **, * denote significance at 1%, 5%, and 10%.

Table 4.1

Panel H: VIF Test Results

Variable	VIF	1/VIF
Age	1.15	0.866
Tenure	1.19	0.843
CEO_chair_dual	1.01	0.987
Board_size	1.36	0.734
Non_exec %	1.09	0.914
4_larget_institutional %	1.07	0.938
TSR	1.03	0.971
Market_cap	1.38	0.725
Mean VIF	1.16	

4.4.3 Panel Data-Fixed Effects Model

The panel data has been used by previous studies on executive compensation, e.g. Ozkan (2011), who implemented panel data analysis between the periods 2007-2012, testing performance variables on compensation variables. Also, similar to other executive compensation studies (e.g. Conyon, 2014; Brick et al., 2006), this study employs fixed effects since it removes individial-specific unobserved effects.[37] The sample consists of firms with varying sizes, so there is a chance of the existence of differences amongst these firms that consist of management quality and the firm's organizational structure. In this case, the fixed effect estimator is applied to test the relationship between compensation and performance in order to allow for this unobserved heterogeneity, as each firm has a different strategy on executive compensation and a different style of management. By applying the fixed effect approach, the estimation helps to remove much of the error variance that is due to the distortions

[37] Note: In order to select between the fixed effects and random effects estimator, we conduct the Hausman test (1978). The results are reported in Table A.4.1 of Appendix to Chapter 4.

arising from the individual differences between groups that come from the omitted variables or the unobserved heterogeneity that is correlated with the regressors.

4.5 Empirical Results

In this section, we analyse the association between the level of compensation and firm performance after controlling for corporate governance mechanisms. The results in Panel A of Table 4.2 demonstrates that short-term firm performance is significantly related to all components of CEO compensation, except for equity pay. In Column 3, the coefficient for total shareholder return is 0.102 and statistically significant at 1% level in determining realized pay. This estimate implies that CEO will receive an increase of 1.02% in realized pay for a 10 percentage point increase in total shareholder return. However, 10 percentage point increase in total shareholder return has immediate 0.2% increase on CEO short-term pay. One possible explanation for this result is that short-term pay is also sensitive to short-term firm performance since it includes the elements of bonus, which are directly associated with one year performance condition. The study by Bruce et al. (2007) which employs short-term pay as a proxy for executive compensation and finds coefficient of a similar magnitude. Overall, these results are consistent with the findings of Gregg et al. (2005) and Ozkan (2011).

The results in Column 3 of Table 2 (Panel A) reveal that the coefficient on firm performance is insignificant and positive in explaining equity compensation. A possible explanation for this result is that since equity compensation contains components which are associated with three-year firm performance, so a one-year performance, alone, will not determine the level of equity compensation. Taken together, these results strongly indicate that financial indicators of FTSE 350 firms impact the level and structure of the compensation, except for equity compensation. The results support the principal-agent hypothesis which asserts that executives should be

compensated for adding to the success of the firm and this is consistent with the findings of Core et al. (1999) and Brick et al. (2006). The adjusted R^2 of the regression is 73% for short term pay, 63% for equity pay, 72% for total compensation and 73% for total realized pay, showing higher explanatory power for all model specifications.

Turning towards a discussion on control variables, market capitalization has a significant and positive impact on equity pay, realized pay, and total pay. These findings are in line with Conyon and Murphy (2000). However, the magnitude of the coefficient on market capitalization in determining equity pay is the greatest. Usually, large firms have a complex structure of executive compensation with a greater capacity to granting higher incentive compensation to retain talented CEOs than smaller firms. CEO tenure influences all elements of CEO compensation, suggesting that CEOs who stay longer in the company get paid more since they have greater control and power. Also, the size of the coefficient on tenure is greater when we use equity pay as a dependent variable. These results are consistent with those of Allgood et al. (2012) and Janakiraman et al. (2010). However, there exists an insignificant relationship between components of CEO pay and CEO duality. Untabulated results reveal that very few firms engage in chair duality. The CEOs in firms with chair duality are not awarded a higher pay than firms where CEO is not the chairman of the board. This finding is congruent with the results of Conyon and Peck (1998) but different to that of Core et al. (1999).

The results also show that there exists an insignificant relationship between components of compensation and board size. These findings are contrary to those of Firth et al. (2007), who find a negative association between compensation and board size, implying that boards play an effective role in monitoring executive compensation. We also note from the results that the coefficient of top 4 institutional ownership concentration is negative and significant in determining equity pay, realized pay and total pay. This suggests that institutional investors are

solely concerned about components of CEO pay which include performance-based elements and are open to manipulation. While the presence of institutional investors has no impact on short-term pay, a greater concentration of institutional owners monitors only specific components of CEO compensation. Overall, this finding is consistent with the previous empirical evidence reported by Ozkan (2007) and Hartzell and Starks (2003), who find that institutional shareholders are active and their greater concentration leads to lower levels of compensation. Concerning percentage of non-executive directors, the coefficient is negative and significant with all measures except for short-term pay. This implies that firms with greater non-executive directors on board offer lower levels of equity pay, realized pay and total pay. These results are consistent with that of Mehran (1995) but contrary to Ozkan (2007) and Frank et al. (2001).

The first three columns in Table 4.2 of Panel B report the association between components of pay and long-term firm performance. Since LTIPs are three-year plans, we use three year TSR to study its impact on the level of equity pay, realized pay, and total pay. The results indicate that there is a significant relationship between components of compensation and long-term firm performance but the magnitude of the coefficients on shareholder returns varies for different elements of CEO compensation. Additionally, equity pay, realized pay and total pay are positively related to long-term performance and statistically significant at 1% level. However, the coefficient on long-term shareholder return is higher in determining equity pay. The results in Column 1 of this Table show that a CEO will receive an increase of 2.01% in equity pay for a 10% increase in three-year shareholder return; while 10 percentage point increase in three-year shareholder return corresponds to 1.23% increase in realized pay. These findings are in line with the principle-agent theory, showing that executives are compensated to act in the best interest of shareholders.

Additionally, in Columns 4 and 5 of Table 4.2 (Panel B), we also include an interaction of long-run performance (three-year TSR) with a number of long-term incentives granted by the company. We note that the coefficients on Dummy plan 2 × TSR and Dummy plan 3 × TSR are positive and statistically significant at 1% level, indicating that firms which grant greater number of plans strengthen the link between pay and performance.

In realized pay specification, adjusting for logarithms, the coefficient on Dummy plan 2 × TSR tells us that, on an average, 10 percentage point increase in TSR will bring 1.44 % increase in realized pay, which is less than 1.86 % increase, due to the presence of three long-term incentive plans in compensation contracts.[38] The coefficient on Dummy plan 1 × TSR is also statistically significant at 10% level. This higher pay-performance responsiveness in firms which operate two and three plans suggest that imposing greater performance conditions encourages greater CEO effort.

Conversely, the coefficient on Dummy plan 4 × TSR is negatively significant. A possible explanation for the negative existence of pay-performance responsiveness is that companies which offer four LTIPs have too many performance conditions attached that are not solely based on increasing shareholder value. Hence, CEOs work towards achieving too many performance targets which might effect the performance of the company. Consequently, an increase in compensation is negatively associated with total shareholder return. Irrespective of whether we use realized pay or total pay as a proxy for compensation, in companies offering one, two or three plans, CEOs are awarded greater compensation for adding three year's shareholder return. From the results, we observe that coefficient on dummy plans are statistically significant in

[38] Note: In order to find pay-performance responsiveness for firms which operate 2 plans, we only use coefficient of Dummy_plan_2*TSR (0.144) and do not add the coefficient of TSR (0.016) because it is statistically insignificant. This applies to firms which grant one, three and four plans, as well.

determining the components of CEO compensation. The companies which use two or three long-term incentives award a higher realized pay and total pay than companies which do not include long-term incentives in their compensation contracts.

Turning now to the incentive strength of the number of long-term incentive plans, Panel C of Table 4.2 shows that there exists strong evidence that higher incentives granted within two and three plans strengthen the link between realized pay and firm performance. These results remain consistent when using total pay as a dependent variable. Overall, these results lead us to suggest that for CEOs, the number of plans is equally motivating as the value of incentives within one, two and three plans being offered by the company.

Now, we attempt to explore the pay-performance responsiveness within the type of plans (i.e. stock options and performance share plans). In order to explain pay-performance responsiveness, we include an interaction between total shareholder return and performance share plans dummy granted by the company. The dummy interaction for share option is also constructed in a similar way. In Column 1 of Table 4.2 (Panel D), results show that the coefficient on Dummy PSP × TSR is significant at 5% level and it also shows 10 percentage point increase in TSR corresponds to 1.46% [i.e., 10 × (0.054+ 0.092) %] increase in realized pay when PSPs are included in compensation contracts. Whereas the coefficient on Dummy Option × TSR is positive but statistically insignificant in determining realized pay. Thus, the presence of PSP induces CEO to put greater effort that will lead to alignment between CEO and shareholders interest. One possible explanation for this is that since TSR, as a performance condition, is more commonly employed in PSPs, this leads to an increase in pay-performance sensitivity. Also, analyzing the strength measurement, the positive significance of ln (Value PSP) implies that PSP compensation leads to larger pay-performance responsiveness relative to the use of share options, as shown in Columns 3 and 4 of Table 4.2 (Panel D).

We can conclude that not all companies that offer a higher number of LTIPs are compensated for adding shareholder wealth. Overall, our results are consistent with agency perspective, showing that the adoption of long-term incentives aligns executives' interest with that of the shareholders. Although CEOs receive higher compensation in firms which grant four plans, their awards are not aligned with the shareholders' interests. These could be a way to make the remuneration package appear more complex and challenging from an external perspective or, perhaps, to camouflage high rewards granted to the CEOs.

Table 4.2

Panel A: CEO compensation as a function of corporate performance at previous interval (t-1→t)

This table represents the estimation of results for components of CEO compensation against short-term firm performance (one-year return to shareholders), board size, % of non-executive directors, % top 4 largest institutional ownership, CEO chair duality, CEO age, CEO tenure and market capitalization. The dependent variable consists of (1) short-term compensation (2) equity pay (3) realized pay (4) total pay, expressed in the natural logarithm of their values. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	**Short term Pay (1)**	**Equity Pay (2)**	**Realized Pay (3)**	**Total Pay (4)**
Constant	12.936***	5.489*	9.452***	12.186***
	(0.49)	(3.24)	(1.48)	(1.14)
Age	0.003	0.004	0.007	0.006
	(0.00)	(0.01)	(0.01)	(0.01)
Tenure	0.011**	0.044***	0.032***	0.019***
	(0.00)	(0.02)	(0.00)	(0.00)
CEO_chair_dual	-0.165	0.283	-0.075	-0.051
	(0.22)	(0.43)	(0.18)	(0.14)
Board_size	0.032	0.062	0.05	0.019
	(0.02)	(0.03)	(0.03)	(0.05)
Non_exec %	-0.004	-0.008**	-0.007**	-0.005*
	(0.00)	(0.00)	(0.00)	(0.00)
4_largest_institutional %	-0.001	-0.004**	-0.004***	-0.003**
	(0.00)	(0.00)	(0.00)	(0.00)
Ln_market_Cap	0.055	0.194***	0.095**	0.051**
	(0.06)	(0.06)	(0.05)	(0.02)
TSR	0.023`**	0.003	0.102***	0.073**
	(0.01)	(0.06)	(0.03)	(0.03)
R-squared	0.81	0.76	0.81	0.81
Adjusted R-squared	0.73	0.63	0.73	0.72
Fixed firm effects	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes
Observations	740	740	740	740

Table 4.2

Panel B: CEO compensation as a function of corporate performance at previous interval (t-3→t)

This table represents the estimation of results for different components of CEO compensation against long-term firm performance (three-year return to shareholders), board size, % of non-executive directors, % of top 4 largest institutional ownership, CEO age, CEO tenure, chair duality and market capitalization. The dependent variable consists of (1) equity pay (2) realized pay (3) total pay (4) realized pay (5) total pay, expressed in the natural logarithm of their values.

Variable	Equity Pay (1)	Realized Pay (2)	Total Pay (3)	Realized Pay (4)	Total Pay (5)
Constant	6.39***	8.921***	5.571***	10.932***	5.362***
	(1.53)	(1.38)	(0.62)	(1.32)	(0.31)
Age	0.006	0.007	0.003	0.006	-0.001
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Tenure	0.031**	0.035***	0.012***	0.032***	0.011***
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
CEO_chair_dual	0.403	-0.033	0.021	-0.072	-0.038
	(0.47)	(0.16)	(0.11)	(0.06)	(0.10)
Board_size	0.056	0.047	0.011	0.043	0.021
	(0.05)	(0.04)	(0.01)	(0.03)	(0.01)
Non_exec %	-0.005**	-0.005**	-0.002*	-0.006**	-0.002*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
4_largest_institutional %	-0.005*	-0.005***	-0.001**	-0.004***	-0.001*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ln_market_Cap	0.301**	0.127***	0.079***	0.116*	0.040***
	(0.13)	(0.03)	(0.03)	(0.06)	(0.01)
TSR	0.201***	0.123***	0.092***	0.016	0.014
	(0.0)	(0.04)	(0.01)	(0.05)	(0.02)
Dummy_plan_1				0.105**	0.044***
				(0.05)	(0.01)
Dummy_plan_2				0.198***	0.082***
				(0.06)	(0.01)
Dummy_plan_3				0.453***	0.268***
				(0.11)	(0.02)
Dummy_plan_4				0.526***	0.201***
				(0.11)	(0.02)
Dummy_plan_1 × TSR				0.062*	0.072**
				(0.03)	(0.03)
Dummy_plan_2 × TSR				0.144***	0.065***
				(0.05)	(0.03)
Dummy_plan_3 × TSR				0.186**	0.055**
				(0.08)	(0.02)
Dummy_plan_4 × TSR				-1.445**	-0.395**
				(0.61)	(0.16)
R-squared	0.78	0.79	0.84	0.80	0.87
Adjusted R-squared	0.67	0.69	0.77	0.72	0.81
Fixed firm effects	Yes	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes	Yes
Observations	690	690	690	690	690

Table 4.2

Panel C: Multivariate model examining the effectiveness of number of plans for CEO at previous interval (t-3→t)

This table represents the estimation of results for components of CEO compensation against long-term firm performance (three-year return to shareholders), board size, % of non-executive directors, % of top 4 largest institutional ownership, CEO age, CEO tenure, CEO chair duality, granted value, CEO value plan 1, value plan 2, value plan 3, value plan 4 and market capitalization. The dependent variable consists of (1) realized pay (2) total pay, expressed in the natural logarithm of their values. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	Realized Pay	Total Pay
	(1)	(2)
Constant	10.534***	5.245***
	(1.31)	(0.30)
Age	0.007	-0.001
	(0.00)	(0.00)
Tenure	0.034***	0.012***
	(0.01)	(0.00)
CEO_chair_dual	-0.072	-0.050
	(0.17)	(0.06)
Board_size	0.048	0.011
	(0.04)	(0.01)
Non_exec %	-0.004**	-0.002**
	(0.00)	(0.00)
4_largest_institutional %	-0.004**	-0.001*
	(0.00)	(0.00)
Ln_market_Cap	0.115*	0.039***
	(0.06)	(0.01)
TSR	-0.011	-0.012
	(0.03)	(0.01)
Ln_value_grant	0.033***	0.014***
	(0.01)	(0.00)
Ln (Value_plan_1) × TSR	0.001*	0.001*
	(0.00)	(0.00)
Ln (Value_plan_2) × TSR	0.012***	0.005***
	(0.00)	(0.00)
Ln (Value_plan_3) × TSR	0.021***	0.008***
	(0.01)	(0.00)
Ln (Value_plan_4) × TSR	-0.002***	-0.010***
	(0.005)	(0.004)
R-squared	0.80	0.86
Adjusted R-squared	0.72	0.80
Fixed firm effects	Yes	Yes
Fixed year effects	Yes	Yes
Observations	690	690

Table 4.2

Panel D: Multivariate model examining the effectiveness of type of plans for CEO

This table represents the estimation of results for total compensation against long-term firm performance (three-year return to shareholders), board size, % of institutional ownership, % of top 4 largest institutional ownership, age, tenure, chair duality, granted value, dummy option, dummy PSP, value option, value restricted stock share and market capitalization. The dependent variable consists of (1) realized pay (2) total pay (3) realized pay (4) total pay, expressed in the natural logarithm of their values. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	Realized Pay (1)	Total Pay (2)	Realized Pay (3)	Total Pay (4)
Constant	10.964***	5.501***	10.773***	5.384***
	(1.53)	(0.32)	(1.58)	(0.33)
Age	0.006	0.001	0.006	0.001
	(0.01)	(0.00)	(0.01)	(0.00)
Tenure	0.036***	0.013***	0.036***	0.013***
	(0.01)	(0.00)	(0.01)	(0.00)
CEO_chair_dual	0.145	0.159	0.144	0.151
	(0.53)	(0.97)	(0.53)	(0.96)
Board_size	0.049	0.009	0.047	0.010
	(0.05)	(0.01)	(0.05)	(0.01)
Non_exec %	-0.007**	-0.002*	-0.008**	-0.003*
	(0.00)	(0.00)	(0.00)	(0.00)
4_largest_institutional %	-0.003**	-0.001**	-0.003**	-0.001*
	(0.00)	(0.00)	(0.00)	(0.00)
Ln_market_Cap	0.122*	0.040**	0.112*	0.034**
	(0.07)	(0.02)	(0.07)	(0.02)
TSR	0.054**	0.030***	0.059***	0.027***
	(0.02)	(0.01)	(0.01)	(0.00)
Dummy_PSP	-0.009	-0.012		
	(0.03)	(0.02)		
Dummy_Option	0.013	0.013		
	(0.10)	(0.04)		
Dummy_PSP × TSR	0.092**	0.033***		
	(0.04)	(0.00)		
Dummy_Option × TSR	0.081	0.033		
	(0.10)	(0.03)		
Ln_value_grant			0.040***	0.017***
			(0.01)	(0.00)
Ln (Value_PSP) × TSR			0.007***	0.003***
			(0.00)	(0.00)
Ln (Value_Option) × TSR			0.006	0.002
			(0.00)	(0.00)
R-squared	0.80	0.86	0.80	0.86
Adjusted R-squared	0.70	0.79	0.71	0.80
Fixed firm effects	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes
Observations	691	691	691	691

Turning to the discussion on CFO pay, the results presented in Panel A of Table 4.3 tests the effect of short-term firm performance on the level of CFO short-term pay, equity pay, realized pay, and total pay after controlling for corporate governance variables. The findings indicate that the coefficient on TSR is positive and significant in determining short-term pay, realized pay and total pay except for equity pay. This result is consistent with that of Conyon (2014), who also employs three-year TSR for US firms. However, these regression results infer that a CFO will receive an increase of 0.5% in realized pay for a 10-percentage point increase in total shareholder return. Similar to the findings of CEO results, there is an insignificant association between equity compensation and short-term firm performance. Taken as a whole, these results reflect that there is an influence of firm performance to the level and structure of the CFO compensation, thereby, supporting the principal-agent theory.

The results in Panel A of Table 4.3 also show that there exist insignificant associations between board size and components of CEO pay. These findings suggest that bigger boards do not play a monitoring role in the design of compensation contracts. Contrary to this, greater institutional ownership concentration leads to lower levels of equity pay, realized pay and total pay for CFO. These results imply that institutional owners show their concern on those components which include performance-based elements. Similar to our findings for CEO tenure, there exists a significant association between CFO tenure and the four components of pay, implying that CFOs that stay longer in the firm receive higher levels of compensation. We note that greater percentage of non-executive directors on board have a negative impact on equity pay, realized pay and total pay. In contrast to CEO findings, these results are statistically significant at 10%. This weak statistical evidence suggests that greater percentage of non-executive directors on board show a greater concern for the levels of CEO pay when compared to the results for that of CFO. However, we do not find any significant association between CFO age and the four components of their pay. These results are contrary to the findings of El-Sayed (2013), where

age is an important determinant of the components of compensation. However, his study does not exclusively analyse for CFO, rather, it considers all executives on the board.

Finally, the coefficients estimate for market capitalization, which is a proxy for firm size and are positive and significant in determining all components of pay except for short-term pay. These results are in line with the findings of Conyon and Murphy (2000). Usually, large sized companies have a complex structure of executive compensation and grant more LTIPs than small-sized firms. Large sized firms are in a better position to attract more talented CFOs due to their greater capacity to pay. In turn, these talented CFOs will potentially enable the achievement of targets leading to greater LTIPs vesting, resulting in increased CFO realized pay, too.

Columns 1-3 of Table 4.3 (Panel B) show the effect of long-term performance on the level of CFO equity pay, realized pay, and total pay. However, three-year total shareholder returns have a positive and significant effect in determining equity pay, realized pay, and total pay at the 5% significance level.

In Column 1, the coefficient for total shareholder return is 0.036 and statistically significant at 10% level in determining equity pay. This estimate implies that CFO will receive an increase of 0.36 in equity pay for a 10-percentage point increase in total shareholder return. Although there exists a positive association between these, the magnitude of coefficients on shareholder return is much smaller for CFO in contrast to that of CEO, thus, suggesting that the relationship between compensation and performance is stronger for CEO than that of CFO. This might be due to since CEO holds higher position, therefore, firm places greater focus on the level of CEO compensation. Overall, these findings lend support to the principal-agent model which asserts that executives are rewarded to align their own interests with those of the shareholders.

Next, in Columns 4 and 5, we investigate the impact of the number of LTIPs granted on pay-performance responsiveness. We include four dummies in order to differentiate between the firms which grant long-term incentives relative to the firms which do not grant any LTIPs (reference category). We find that the coefficients on Dummy plans 3 and 4 are high and statistically significant in determining realized pay and total pay. Additionally, we include an interaction between total shareholder return and the number of long-term incentive plans granted by the company. The coefficients on Dummy 3 plan × TSR and Dummy 4 plan × TSR show that in companies which grant three or four plans, there exist greater interest alignment than those that do not offer LTIPs. However, the pay-performance responsiveness in companies that offer one or two plans is not significantly different from those that do not grant any LTIPs.

Furthermore, in Column 4, for pay-performance responsiveness within four plans, the coefficient of Dummy 4 plan interaction with TSR shows that a 10-percentage point increase in TSR will lead to 1.94% increase in CFO realized pay. In contrast to this result, the pay-performance responsiveness is weaker in firms which offer three plans. As discussed, previous studies which take into account the equity component of compensation have only considered the granted value of compensation as opposed to the vested value of equity compensation in order to analyse pay and performance relationship or pay-performance responsiveness. Unlike these studies, we employ total pay as well as realized pay, to get better insight into the association between pay and performance.

Next, we examine the incentive strength of different long-term incentives. The results presented in Panel C of Table 4.3 show that the pay-performance association further strengthens with the greater amount awarded within the company that offers three or four LITPs. The association between pay and performance for number of LTIPs and amount within these plans for CFO differs to the findings for CEO. These results suggest that implementing greater number of

plans, which possibly has greater number of performance conditions will encourage greater CFO effort. Thus, higher components in LTIPs will align CFO reward with shareholders' interests to a greater extent. These results are consistent with our hypothesis and support agency theory that the higher the amount granted within long-term incentives, the higher is the pay-performance responsiveness.

In Column 2 of Table 4.3 (Panel D), in contrast to CEO, the presence of share options in CFO compensation contracts is not associated with pay-performance responsiveness. However, the interaction between dummy PSP and TSR shows that 10-percentage point improvement in TSR results in an increase of 0.63%. This relationship further strengthens as the rewards become more valuable, as shown in Column 3 of Table 4.3 (Panel D). Taking the results of CEO and CFO together, we can conclude that there exists greater pay performance responsiveness when PSPs are adopted in compensation contracts, strengthening the interest alignment, relative to the use of stock options in compensation contracts; such convergence of interests between CEO/CFO and shareholders stimulates firm performance.

4.6 Robustness Check

In this section, the previous results are subjected to a variety of robustness tests, all of which are available in the Appendix to Chapter 4. Having already employed realized pay as a proxy of compensation to investigate the pay-performance relationship and pay-performance responsiveness in numbers and types of plans in our main results, we also employ market adjusted TSR to analyze its impact on component of pay. We find that the short-term firm performance positively impacts the compensation of CEO and CFO, except for equity pay. However, there exists positive association between components of pay and long-term firm performance, providing further evidence in support of our hypothesis. When we analyse pay-

performance responsiveness of number of plans and their strength within these plans, the results from the market adjusted TSR also remain robust to original findings and show that for CEO, the firms operating up to three plans, the greater the number and value of plans, the greater is the pay-performance responsiveness. However, for CFO, the greater the number or value of LTIPs granted, the higher is the total compensation and realized pay and greater pay-performance responsiveness.

Table 4.3

Panel A: CFO compensation as a function of corporate performance at previous interval (t-1→t)

This table represents the estimation of results for different components of CFO compensation against short-term firm performance (one year return to shareholders), board size, % of non-executive directors, % of top 4 largest institutional ownership, chair duality, CFO age, CFO tenure and market capitalization. The dependent variable consists of (1) short-term pay (2) equity pay (3) realized pay (4) total pay, expressed in the natural logarithm of their values. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	Short term pay (1)	Equity Pay (2)	Realized Pay (3)	Total Pay (4)
Constant	14.440***	0.215	8.923***	10.501***
	(0.92)	(2.48)	(0.82)	(1.55)
Age	0.002	0.004	-0.001	-0.001
	(0.00)	(0.02)	(0.01)	(0.01)
Tenure	0.013**	0.054***	0.042***	0.039***
	(0.01)	(0.01)	(0.01)	(0.01)
CEO_chair_dual	0.088	0.524	0.242	0.270
	(0.09)	(0.35)	(0.40)	(0.24)
Board_size	0.011	0.091	0.039	0.036
	(0.01)	(0.07)	(0.03)	(0.02)
Non_exec %	-0.001	-0.003*	-0.003*	-0.004*
	(0.00)	(0.00)	(0.00)	(0.00)
4_largest_institutional %	-0.002	-0.006**	-0.004**	-0.002*
	(0.00)	(0.00)	(0.00)	(0.00)
Ln_market_Cap	-0.060	0.072***	0.052***	0.041*
	(0.05)	(0.01)	(0.01)	(0.02)
TSR	0.063**	0.003	0.051*	0.032*
	(0.03)	(0.06)	(0.029)	(0.018)
R-squared	0.76	0.72	0.71	0.75
Adjusted R-squared	0.67	0.58	0.61	0.63
Fixed firm effects	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes
Observations	697	629	697	697

Table 4.3

Panel B: CFO compensation as a function of corporate performance at previous interval (t-3→t)

This table represents the estimation of results for different components of CFO compensation against long-term firm performance (three-year return to shareholders), board size, % of non-executive directors, % of top 4 largest institutional ownership, CFO age, CFO tenure, chair duality, CFO Dummy plan 1, Dummy plan 2, Dummy plan 3, Dummy plan 4 and market capitalization. The dependent variable consists of (1) equity pay (2) realized pay (3) total pay (4) total realized pay (5) total pay, expressed in the natural logarithm of their values.

Variable	Equity Pay	Realized Pay	Total Pay	Realized Pay	Total Pay
	(1)	(2)	(3)	(4)	(5)
Constant	0.924	3.784***	4.796***	4.045***	4.890***
	(1.56)	(0.52)	(0.35)	(0.39)	(0.39)
Age	0.001	0.002	0.004	0.002	0.005
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Tenure	0.026***	0.011***	0.010***	0.009*	0.009***
	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)
CEO_chair_dual	0.23	0.132	0.189	0.223	0.171
	(0.21)	(0.26)	(0.15)	(0.26)	(0.14)
Board_size	0.022	0.000	0.021	0.049	0.019
	(0.02)	(0.01)	(0.02)	(0.04)	(0.01)
Non_exec %	-0.002	-0.004*	-0.001*	-0.004*	-0.002*
	(0.00)	(0.002)	(0.00)	(0.00)	(0.00)
4_largest_institutional %	-0.003***	-0.004**	-0.002**	-0.004*	-0.001**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ln_market_Cap	0.098***	0.061***	0.043***	0.066***	0.034**
	(0.03)	(0.02)	(0.01)	(0.02)	(0.01)
TSR	0.036*	0.054**	0.031**	0.009	-0.029
	(0.02)	(0.02)	(0.013)	(0.02)	(0.05)
Dummy_plan_1				0.109	0.098**
				(0.08)	(0.05)
Dummy_plan_2				0.173***	0.107***
				(0.06)	(0.03)
Dummy_plan_3				0.276***	0.196***
				(0.07)	(0.05)
Dummy_plan_4				0.378***	0.289**
				(0.11)	(0.14)
Dummy_plan_1 × TSR				0.045	0.082
				(0.05)	(0.05)
Dummy_plan_2 × TSR				0.074	0.003
				(0.05)	(0.06)
Dummy_plan_3 × TSR				0.111**	0.050**
				(0.05)	(0.02)
Dummy_plan_4 × TSR				0.194*	0.081**
				(0.11)	(0.03)
R-squared	0.71	0..78	0.79	0.70	0.82
Adjusted R-squared	0.65	0.69	0.70	0.58	0.73
Fixed firm effects	Yes	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes	Yes
Observations	647	647	647	647	647

Table 4.3

Panel C: Multivariate model examining the effectiveness of number of plans for CFO at previous interval (t-3→t)

This table represents the estimation of results for different components of CFO compensation against long-term firm performance (three-year return to shareholders), board size, % of non-executive directors, % of top 4 largest institutional ownership, CFO age, CFO tenure, CEO chair duality, granted value, value plan 1, value plan 2, value plan 3, value plan 4, and market capitalization. The dependent variable consists of 1) realized pay 2) total pay, expressed in the natural logarithm of their values. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	**Realized Pay (1)**	**Total Pay (2)**
Constant	4.296***	5.073***
	(0.27)	(0.43)
Age	0.002	0.004
	(0.00)	(0.00)
Tenure	0.009**	0.009***
	(0.00)	(0.00)
CEO_chair_dual	0.234	0.171
	(0.27)	(0.14)
Board_size	0.052	0.020
	(0.04)	(0.01)
Non_exec %	-0.004*	-0.002*
	(0.002)	(0.00)
4_largest_institutional %	-0.004*	-0.001**
	(0.00)	(0.00)
Ln_market_Cap	0.054***	0.026*
	(0.02)	(0.02)
TSR	0.026	0.017
	(0.02)	(0.01)
Ln_value_grant	0.010***	0.009**
	(0.00)	(0.00)
Ln (Value_plan_1) × TSR	0.004	0.000
	(0.00)	(0.00)
Ln (Value_plan_2) × TSR	0.003*	0.002*
	(0.00)	(0.00)
Ln (Value_plan_3) × TSR	0.008***	0.008***
	(0.00)	(0.00)
Ln (Value_plan_4) × TSR	0.019***	0.018***
	(0.01)	(0.01)
R-squared	0.69	0.83
Adjusted R-squared	0.79	0.73
Fixed firm effects	Yes	Yes
Fixed year effects	Yes	Yes
Observations	647	647

Table 4.3

Panel D: Multivariate model examining the effectiveness of type of plans for CFO

This table represents the estimation of results for CFO total compensation and total realized pay against long-term firm performance (three-year return to shareholders), board size, % of non-executive directors, % of top 4 largest institutional ownership, age, tenure, chair duality, dummy Option, dummy PSP, value option, value restricted stock share and market capitalization. The dependent variable consists of (1) realized pay (2) total pay (3) realized pay (2) total pay, expressed in the natural logarithm of their values. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	**Realized Pay (1)**	**Total Pay (2)**	**Realized Pay (3)**	**Total Pay (4)**
Constant	5.112***	5.749***	5.003***	5.610***
	(0.54)	(0.43)	(0.56)	(0.38)
Age	0.002	0.001	0.003	0.001
	(0.01)	(0.00)	(0.01)	(0.00)
Tenure	0.014**	0.013***	0.012**	0.013***
	(0.00)	(0.00)	(0.01)	(0.00)
CEO_chair_dual	0.238	0.201	0.234	0.194
	(0.27)	(0.16)	(0.26)	(0.15)
Board_size	0.051	0.020	0.051	0.020
	(0.04)	(0.01)	(0.03)	(0.01)
Non_exec %	-0.004**	-0.002*	-0.004*	-0.002*
	(0.00)	(0.00)	(0.00)	(0.00)
4_largest_institutional %	-0.004**	-0.002**	-0.004*	-0.001**
	(0.00)	(0.00)	(0.00)	(0.00)
Ln_market_Cap	0.062**	0.065**	0.054***	0.026*
	(0.02)	(0.02)	(0.02)	(0.02)
TSR	0.031	0.020	0.021	0.030
	(0.02)	(0.01)	(0.02)	(0.02)
Dummy_PSP	0.008	0.024		
	(0.05)	(0.03)		
Dummy_Option	0.075	0.002		
	(0.08)	(0.07)		
Dummy_PSP × TSR	0.063***	0.020**		
	(0.02)	(0.01)		
Dummy_Option × TSR	-0.099	-0.014		
	(0.08)	(0.05)		
Ln_value_grant			0.011***	0.009**
			(0.00)	(0.00)
Ln (Value_PSP) × TSR			0.003***	0.002**
			(0.00)	(0.00)
Ln (Value_Option) × TSR			-0.005	-0.002
			(0.00)	(0.00)
R-squared	0.80	0.86	0.80	0.86
Adjusted R-squared	0.70	0.79	0.71	0.80
Fixed firm effects	Yes	Yes	Yes	Yes
Fixed year effects	Yes	Yes	Yes	Yes
Observations	647	647	647	647

4.7 Conclusion

The current chapter studies different measures of CEO/CFO compensation in analyzing pay for performance relationship for a sample of FTSE 350 firms (minus financial companies). In contrast to previous UK studies, we employ a total realized pay which is the sum of base salary, bonus and payouts/vested amount from LTIPs. As equity part of the compensation runs for three years, we use three-year shareholder return to determine the impact on equity pay, total pay, and realized pay. This chapter takes into account the effect of different numbers, amount, and types of long-term incentive plans in analysing pay-performance responsiveness. Additionally, we provide a novel contribution to the existing literature by analyzing CFO compensation, since prior literature predominantly focuses on CEO compensation. In our analysis, we control for several corporate governance variables such as chair duality, age and tenure, top 4 institutional ownership, board size and percentage of non-executive directors.

Our results show that components of CEO/CFO compensation are determined by long-term firm performance. However, there also exist positive associations between previous year's total shareholder return and components of pay except for equity pay. This finding suggests that equity pay (long-term pay) is only determined by longer-term firm performance of three years. We also observe that among all components of compensation, the magnitude of the coefficient on three year shareholder return is higher in determining equity pay. This is because equity pay includes the vested values from equity grants which are directly linked with performance. Hence, these results are consistent with the principal-agent model. However, we also find that CEO/CFO tenure is statistically significant in explaining measures of compensation. We also document that non-executive directors and institutional investors actively monitor the equity part of the compensation as it is the most variable component of the compensation.

The results of this study will help to lessen the concern of blockholders and institutional investors about executives receiving higher levels of compensation and that this pay should be adequately linked with firm performance. For CFO, the companies that use three or four long-term incentives give higher realized pay and total remuneration than companies that do not award long-term incentives. For CEO, our results indicate that companies which operate one, two and three plans in compensation contracts, there exists greater pay performance responsiveness than firms which do not offer any long-term incentive plan. This relationship further strengthens the association between pay and performance if greater amount of incentives are granted within these LTIPs. Furthermore, different performance conditions attached to the compensation which are not solely based on total shareholder return can be a possible cause of the negative existence of pay-performance responsiveness within companies which operates four LTIPs. It is also possible that companies tilt the design of compensation package so that it appears more complex but is, actually, not quite efficient. For CEO, the companies that operate two or three plans provide a higher level of compensation than firms which do not operate any LTIPs. For CFO, the greater the components in compensation package are, the higher the pay-performance association. Lastly, for CEO as well as CFO, adopting performance share plans in compensation contracts leads to a greater alignment between executives and shareholders' interests. The pay-performance responsiveness is stronger for CEO than that of CFO. Finally, there exists no pay performance responsiveness when share options are adopted in compensation contracts.

APPENDIX TO CHAPTER 4

Variable Definition

This table provides a detailed description of the construction of all the variables used in this chapter.

Dependent Variables	Definition
Base Salary	Natural logarithm of fixed amount received by both CEO and CFO for that financial year
Bonus	Natural logarithm of amount paid to CEO and CFO for the financial year inclusive of any deferred element (provided there is no performance requirement on release)
Short-term Pay	Natural logarithm of total cash value received from first two pay components and other benefits and allowances received by both CEO and CFO
Equity pay	Natural logarithm of the granted value of performance shares, option grants, grant value of matching plans, vested value of performance share plans, exercised value of options, and vested value of matching plans. Total remuneration includes total cash plus the granted value of long-term incentives for that financial year
Realized Pay	Natural logarithm of the sum of base pay, bonus and the vested value of long-term incentives (options, performance share plans, matching plans and others that are vested for that financial year)
Total Pay	Natural logarithm of short-term pay plus the granted value of long-term incentives (options, performance share plans, matching plans and others) for that financial year

Independent Variables	Definition
CEO/ CFO Age	Age of CEO and CFO
CEO/ CFO Tenure	The number of years, respectively, served in these positions
4_largest_institutional %	The percentage ownership held by the top-four institutional investors
Non_exec %	Percentage of number of non-executive directors over total number of directors
Board_size	Total number of directors on the board
Ln_market_Cap	Natural Logarithm of the Stock's Market Capitalization; i.e. the product of the price per share and the number of shares outstanding at the end of financial year, expressed in thousands of pounds
Dummy plan (1,2,3,4)	Dummy plan 1 is a dummy variable which is equal to one if the firm operates one long-term incentive plan in CEO/CFO compensation contract, zero otherwise. Similarly, for Dummy plan 2, it works as follows: if the company rewards two long-term incentives, it takes the value of 1 and zero-otherwise. The other two Dummy plans 3 and 4 are similarly constructed.
Value_plan (1, 2, 3, 4)	The value of awards within the dummy plans 1, 2, 3 and 4, respectively, as granted by the company

Table A. 4.1: Hausman Test

In order to select between the fixed effects and random effects estimator, we conduct the Hausman (1978) test. Its null hypothesis states that the error terms are not correlated with the independent variables, implying that the random effects estimator is the more efficient alternative (Greene, 2012).

E. 1 Hypothesis test

Null hypothesis: Random-effects model is appropriate

Alternative hypothesis: fixed effects model is appropriate

Based on the results if null is rejected, then the alternative hypothesis or fixed effects model would be preferred over random effects model.

The Hausman test results
The Hausman test results Test: Ho: difference in coefficients not systematic
chi2(22) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 50.02
Prob>chi2 = 0.000

where b is the vector of fixed effect estimate, and B is a vector of random effect estimate. The null hypothesis is that the difference in coefficients is not systematic. This implies that that there is no correlation between heterogeneous effects and the explanatory variables. When random effect is valid, the difference in test statistics between random effect and fixed effect is tiny or close to zero (Wooldridge, 2010). However, when random effect is not valid, then

random and fixed effect will have a large difference and the test statistic will be different from zero, thus rejecting the null hypothesis.

According to the above table, the p-value for the Hausman test is less than 1% which indicates that random effects are not appropriate and that the fixed effects should be estimated, instead. Therefore, the Hausman test rejects the null hypothesis and the use of fixed effects model is favoured over the use of random effects model. Thus, we estimate our pay-performance model by using the fixed effects model.

Table A. 4.2: Robustness test: Impact of Market adjusted TSR (1 year) on components of CEO pay

For simplicity, we only report results of our main variables (TSR). The dependent variable consists of 1) short-term compensation (2) equity pay (3) realized pay (4) total pay. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)
TSR	0.031*	0.002	0.089**	0.062*
	(0.016)	(0.059)	(0.039)	(0.036)

Table A.4.3: Robustness test: Impact of market adjusted TSR (3 years) on components of CEO pay

For simplicity, we only report results of our main variables (TSR and their interactions with numbers and value of plans). The dependent variable consists of (2) equity pay (3) realized pay (4) total pay. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

	(2)	(3)	(4)	(3)	(4)	(3)	(4)
TSR	0.060**	0.112***	0.086**	0.025	0.039	0.041	0.012
	(0.028)	(0.010)	(0.040)	(0.061)	(0.028)	(0.021)	(0.008)
Dummy_plan_1 × TSR				0.129*	0.056		
				(0.067))	(0.037)		
Dummy_plan_2 × TSR				0.099**	0.053**		
				(0.046)	(0.024)		
Dummy_plan_3 × TSR				0.110**	0.055**		
				(0.070)	(0.025)		
Dummy_plan_4 × TSR				-2.185**	-0.605**		
				(0.935)	(0.256)		
Ln (Value_plan_1) × TSR						0.007*	0.001*
						(0.003)	(0.000)
Ln (Value_plan_2) × TSR						0.012***	0.004***
						(0.002)	(0.001)
Ln (Value_plan_3) × TSR						0.021***	0.102**
						(0.005)	(0.014)
Ln (Value_plan_4) × TSR						-0.002*	-0.001**
						(0.001)	(0.000)

Table A.4.4: Robustness test: Impact of Market adjusted TSR (1 year) on component of CFO Pay

For simplicity, we only report results of our main variables (TSR). The dependent variable consists of 1) short-term compensation (2) equity pay (3) realized pay (4) total pay. Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)	(4)
TSR	0.067**	0.032	0.041**	0.029*
	(0.031)	(0.024)	(0.019)	(0.016)

Table A.4.5: Robustness test: Impact of market adjusted TSR (3 years) on components of CFO pay

For simplicity, we only report results of our main variables (TSR and their interactions with numbers and value of plans). The dependent variable consists of (2) equity pay (3) realized pay (4) total pay. For simplicity, we only report results of our main variables (TSR). Standard errors are clustered at the firm level and are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

	(2)	(3)	(4)	(3)	(4)	(3)	(4)
TSR	0.037*	0.043**	0.027**	0.010	0.030	0.023	0.012
	(0.021)	(0.021)	(0.012)	(0.061)	(0.060)	(0.015)	(0.013)
Dummy_plan_1 × TSR				0.089	0.054		
				(0.059)	(0.042)		
Dummy_plan_2 × TSR				0.086*	0.045		
				(0.049)	(0.063)		
Dummy_plan_3 × TSR				0.126**	0.076*		
				(0.051)	(0.042)		
Dummy_plan_4 × TSR				0.231**	0.120*		
				(0.101)	(0.057)		
Ln (Value_plan_1) × TSR						0.004	0.000
						(0.003)	(0.000)
Ln (Value_plan_2) × TSR						0.002*	0.003**
						(0.001)	(0.001)
Ln (Value_plan_3) × TSR						0.008***	0.009***
						(0.001)	(0.000)
Ln (Value_plan_4) × TSR						0.022***	0.021***
						(0.008)	(0.007)

5 THE CHOICE OF PERFORMANCE MEASURES, TARGET SETTING AND VESTING LEVELS IN UK FIRMS CEO COMPENSATION CONTRACT

5.1 Introduction

There have been widespread concerns not only on excessive levels of CEO pay but also on the mechanics of incentivization. Prior to the 1990s, the vesting of stock options and restricted shares were time-dependent. As noted in Section 2.1.2, in 1995 the Greenbury Report recommended that UK firms should incorporate rewards dependent upon the firm performance, in preference to traditional time-vested options and restricted stock shares. Successive versions of corporate governance code have resulted in the shift of the landscape for long-term incentive plans, to strengthen interest alignment between executives and shareholders. Since 2002, UK firms have been required to disclose the components of their long-term incentive plans and the performance targets attached to the compensation contracts as per the Directors' Remuneration Report Regulations 2002 (DRRR, 2002) and other corporate governance codes as reviewed in Section 2.1.2.

The executive compensation literature has generally focused on examining the association between executive compensation and firm performance (Jensen and Murphy, 1990; Bebchuk and Fried, 2004 and Ozkan, 2007). Even though, as Murphy (1999) notes, the type of performance measure forms an integral part of compensation structures, along with the levels of target setting, only a limited number of studies have analysed these contractual terms (e.g. Gao et al., 2017; De Angelis and Grinstein, 2015 and Li and Wang, 2016), and whether contracts are designed optimally is still a matter of debate. Additionally, we observe a paradox: while there is greater transparency within annual reports as to the details of their remuneration processes, there is little understanding of the general norms and trends in performance targets,

and their effects in terms of how the detail of the contractual terms affect actual payout are not well understood by investors or the general public.

This chapter contributes to the debate by drawing on a novel dataset whose richness and breadth provides the opportunity to examine the current landscape of long-term incentive plans and their features. While most studies have examined the US firms, research on executive compensation in the UK has made a limited survey of performance measures and targets with sample period for these studies ending in 2003 (e.g. Conyon et al., 2000; Pass et al., 2000 and Zakaria, 2012).

This chapter makes a number of contributions to the global literature on the contractual terms of executive compensation. First, we document a wider array of performance categories employed in CEO compensation contracts than previous studies. Secondly, we provide novel details on vesting levels pertaining to minimum and maximum thresholds of EPS performance measures. Thirdly, we provide new detail on the different relative benchmarks and the use of outperformance plans which trigger vesting when market-based performance measures are set beyond the upper quartile percentile ranking (i.e. in the highest quintile). In a new analysis, we show how the choice of performance benchmark affects how many plans vest and attain minimum and maximum thresholds in actuality. We uncover evidence that some peer groups and benchmarks are easier to beat than others, suggesting that managers could have an influence in the selection of "soft targets". Fourthly, for accounting-based performance measures, we present new detail on the breakdown of different types of EPS and relative targets, and examine their influence on actual vesting, and show again that the formulation of the EPS target has a substantial influence on actual vesting. Finally, we perform a novel empirical analysis on the effect of EPS and TSR volatility on the performance choices made by firms in CEO compensation, after controlling for firm-specific-characteristics, industry and the identity of the

remuneration advisor. In this, we extend the analysis to consider plans which use both EPS and TSR simultaneously as performance measures, and also those which use neither EPS nor TSR, categories which together make up more than half our sample, but which all previous studies have neglected to consider, opting instead for a simplistic EPS vs TSR dichotomy. We find evidence in line with optimal contracting theory as firms select performance measures which are less volatile in nature and our findings also indicate that some remuneration advisors have a clear preference for some performance measures over others. The descriptive statistics show that there exists significant variation in the design of compensation contracts.

The rest of the chapter is structured as follows: Section 5.2 provides an overview of the underlying literature and hypothesis development. Section 5.3 provides an overview of the plan structure. In Section 5.4, we discuss the methodology of our research. Section 5.5 presents the data analysis and empirical results of the model. Section 5.6 focuses on the detailed design of compensation contracts. Section 5.7 provides a summary and conclusion.

5.2 Theory, Related Literature and Hypothesis Development

The separation of ownership and control represents a classical principal-agent problem as management tends to pursue activities that increase their own well-being. Optimal contracting theory views stock-based compensation as a key corporate governance mechanism that mitigates or aligns the divergent interests of management and shareholders of the company. Compensation schemes ought to be designed in such a way as to serve this objective, and firms ought to seek more sophisticated ways of tying executive compensation to firm performance. Hence, optimal contracting theory predicts that firms should incorporate all performance measures which might motivate managers to act in the manner desired by the firm's shareholders.

The Association of British Insurers (ABI), now merged with IVIS, in 1996 published guidelines on the framework of long-term incentives, which promote the following principles[39]: 1) Performance targets should be challenging and linked to corporate performance, 2) Performance targets should be transparent and subject to disclosure, and 3) Performance in long-term incentives should be measured relative to an appropriate peer group or other relevant benchmarks. Interestingly, neither agency theory nor the ABI guidelines specifically mention to employ certain performance measures in compensation contracts, but the theory can be applied to determine the properties of suitable metrics in order to evaluate executive's performance. Hence, this study will seek to determine how firms use different performance metrics in order to align executives' interests with those of shareholders.

5.2.1 Related Literature

5.2.1.1 The Development of the Study of Performance Measures

In examining the history of the construction of executive compensation contracts, we observe that the first generation of performance contracts predominantly utilised market-based measures, while subsequent development has seen the wider introduction of accounting-based measures, and a greater sophistication in the levels and mechanisms of vesting of the rewards. We also see a move towards much greater transparency and disclosure in executive pay-setting. As an example, previous studies show that the firms use accounting measures to evaluate firms' performance when designing compensation contracts (Larcker, 1983; Kumar and Sopariwala, 1992). While others report the introduction of non-financial measures in compensation

[39] Note: Presently, ABI guidelines is part of the Investment Association.
https://www.ivis.co.uk/guidelines
[accessed 20 June, 2017].

contracts (Ittner et al., 1997; Kaplan and Norton, 1992). Later on, the study of executive compensation has moved into examining the pay-performance relationship. A number of studies (e.g. Jensen and Murphy, 1990; Gregg et al., 2012 and Conyon and Peck, 1998) describe the use of the financial and accounting performance measures in examining the pay-performance relationship.

As reviewed in Section 3.3.2, the usefulness of accounting metrics has been discussed by earlier researchers, for example, Lambert and Larcker (1987) and Sloan (1993). Sloan (1993) analyses the cross-section variation in sensitivity of executive remuneration to stock price and earnings firm performance. The author concludes that earnings play a vital role in shielding executive compensation from market fluctuation in equity pay. However, the results of Lambert and Larcker's (1987) study conclude that US firms place more weight on market performance measures when accounting performance measures are more volatile.

Until the reforms brought in by the DRRR in 2002 and Security Exchange Commission (SEC) in 2006, the disclosure of details of executive compensation contracts was limited in the UK and the US respectively, however, annual reports now provide much greater transparency. Previous research which found a prevalence of non-financial measures in executive compensation may, therefore, have been employing an implicit rather than an explicit approach (Davila and Venkatachalam, 2004).

Since then, researchers have started to hand-collect compensation data on US firms, for example, Kim and Yang (2010) examine performance metrics in annual bonus contracts during 2006-2009, Bettis et al. (2010) study 983 US equity-based grants with performance contingency from 1995 to 2001, and De Angelis and Grinstein (2015) analyse the performance criteria in US equity-based grants in 2007. However, far fewer studies have examined the UK.

The only comparable UK study for the present analysis is that of Zakaria (2012), who presents a breakdown of performance measures into options and restricted shares for UK firms for the single year 2002/2003. The study provides a breakdown of performance targets into EPS and TSR measures. We extend this study by taking into account all elements of equity compensation including matching plans and also analyzing the breakdown of minimum and maximum threshold targets required to achieve minimum and upper quartile vesting, neither of which are captured by Zakaria (2012). In addition, our empirical analysis includes companies which employ EPS and TSR measures in combination. We consider this to be an important methodological advance since this latter category accounts for over 45% of the firms in our sample.

5.2.1.2 The Problem of Volatility in Measuring Management Effort

Holmstrom (1979) formulates the theory of the optimal contact under the moral-hazard problem, and develops the "Informativeness Principle", that any performance measure that reveals information about the level of effort provided by an agent (CEO) should be included as a performance metric. He further shows the negative relationship between the noise present in a performance measure and its usefulness in a compensation package. Further, Aggarwal and Samwick (1999b) conclude that CEO pay becomes less sensitive to performance as TSR volatility increases. High pay-performance sensitivity (PPS) evidences a greater alignment between the interests of shareholders and executives. PPS is, therefore, the responsiveness of pay to the change in company performance.

Firms should choose performance measures that strengthen the link between pay and performance in an executive compensation package. Consequently, CEOs should prefer a less volatile performance measure to one which is more volatile, as this reduces uncertainty as to

their level of reward, leading them to make more effort. Hence, optimal contracting theory assists the empirical design of the performance measure, stating that it should not be noisy and insensitive to managerial actions.

Over time, one accounting measure, namely, earnings, has become predominant as a performance metric in incentive contracts. One possible explanation is that earnings figures are more under the direct control of management (Sloan, 1993; O'Byrne, 1990; Watts and Zimmerman, 1990). By contrast, stock prices are affected by market factors which are outside the control of management. In a working paper, Chemmanur et al. (2010) highlight how management can manipulate earnings per share, and show that firms repurchase shares from the market in order to meet EPS targets. An increase in stock repurchases will decrease the number of shares in the market, hence, an increase in EPS can be engineered.

Until the 1980s, the use of accounting performance measures was considered to be the only remedy to the issue of volatility in share prices, making market-based measure an unreliable indicator of management effort. Firms' use of market and accounting-based measures have been observed by Murphy (1999) and Pass et al. (2000). However, in the last two decades, it has become increasingly common to use comparator groups within TSR measures in order to identify and reward relative outperformance and factor out fluctuations which are due to overall market movements. Holmstrom (1982) conducts a pioneering study in measuring relative performance evaluation (RPE), focusing on the need to remove common risk within compensation packages by using the share price relative to a peer group of companies within the same industry or market. RPE in compensation contracts enables common uncertainties to be filtered out and provides more efficient schemes (Lazear and Rosen, 1981).

More recently, Li and Wang (2016) explore the relationship between volatility and the choice of each individual long-term accounting measure in the compensation contracts of US firms.

Their results show that firms are more likely to choose those performance metrics which are less volatile in nature.

5.2.1.3 Hypotheses

In light of the above, we formulate the following research hypotheses:

Hypothesis 5.1 a: The higher the volatility of the market-based (TSR) measure, the greater the likelihood of choosing an accounting-based measure (EPS) only.
Hypothesis 5.1 b: The higher the volatility of the accounting-based measure (EPS), the greater the likelihood of choosing a market-based measure (TSR) only.

5.2.1.4 Isomorphism in Executive Compensation Contracts

The separation of ownership and control can affect the manager's choice of action that potentially influences the wealth of a company's shareholders; efficient contracts should, therefore, be designed in such a way that greater manager-shareholder interest alignment can take place (Conyon et al., 2009). However, other constraints and influences inform the construction of executive contracts: in its simplest form, companies are liable to copy existing practice, and compensation consultants may diffuse the adoption of certain pay practices to other firms, as they may tend to recommend similar structures to a number of different clients. Additionally, executives may bring with them their own expectations of how contracts should be structured, drawing on their own experience-based standard as developed through service on other boards.

More formally, the literature of institutional theory addresses these using a discourse of "isomorphism" to account for these socially-mediated similarities (Di Maggio & Powell 1983).

Three different forms of isomorphism have been identified: mimetic, coercive and normative. Mimetic isomorphism exists when firms follow what other firms are doing in the absence of clear guidelines (Porac et al, 1999; Zajac and Westphal, 1995). Normative isomorphism exists when firms follow standard procedures owing to the influence of common personnel, for example, when executives moving from one board to another leads to common practices being introduced (O' Reilly et al, 1988; Perkins and Hendry, 2005). Coercive isomorphism arises from regulations or codes of conduct forcing the adoption of certain pay-performance practices (Barreto and Baden-Fuller, 2006). In regard to executive compensation, we, therefore, suspect that all three forms of isomorphism may be involved.

5.2.1.5 The Structure of Compensation Contracts

While the above notes studies focusing on the pay-performance relationship for UK and US firms, fewer studies have looked at the detailed structure of compensation contracts, and here, most research has focused on US firms. Murphy (1999) conducts an analysis on the pay practices of US firms, looking at the level and structure of incentive contracts in terms of shares and options employed by the firm within different industries, but does not detail the breakdown of these performance measures. The US pay-setting process is both less transparent and less complex compared to the UK, which makes the research of executive compensation in the UK potentially more informative.

Pass et al. (2000) analyse the breakdown of options and long-term incentives for 150 large companies in the UK, and note that there has been a rapid increase in the use of long-term incentives. Further, they recommend that firms should operate TSR based schemes and benchmark it with appropriate index. Their study does not shed light on vesting percentage at minimum and maximum thresholds targets.

5.2.1.6 The Role of Compensation Consultants

With an increase in the complexity of equity-based pay, the role of the compensation consultant has become crucial as they are considered experts with technical knowledge on the design of compensation packages (Bender, 2011). It has become a widespread practice in US and UK firms to hire compensation consultants to advise on the design and implementation of compensation packages. Conyon et al. (2009) report that the majority of firms in the FTSE 350 Index hire two consultants, with one consultant providing data services and the other providing advice on remuneration packages. Most firms use compensation consultants to gain a perspective on industry-wide compensation practices and those of their competitors. It is possible that as consultants devise new innovative compensation designs, pay-performance practice becomes similar across their clients they advise. Hence, this represents an example of normative isomorphism. Since there is an increase in the number of long-term incentive arrangements in the market, practices will tend to evolve and solidify.

Usually, a remuneration committee will seek independent advice from a remuneration consultant on the design of their compensation packages. The consultant further assists remuneration committees in determining the structure and level of compensation, and the performance measure to be applied.

However, little is known about the factors that influence the actual choice of performance measure. One potential explanation is that firms select specific performance metrics based on the standard practice by their competitors in their industry, or in the market.

5.3 Executive Compensation Plan Structure

5.3.1 The Dataset

Our sample consists of 400 UK with largest market capitalization, from 2007 to 2015. Data on executive compensation contracts comes from the commercial MEIS database, supplemented by hand-collected data from annual reports for 2007 to 2010. To ensure data integrity, MEIS data was verified by checking against hand-collected annual reports.

We study a total of 3400 long-term incentive plans. Many of these plans are inactive and not used in a current year. As a result, our final sample consists of 2970 long-term incentive plans. We categorize industries using the top-level FTSE ICB (Industry Classified Benchmark), consisting of the following industries: basic materials, consumer goods, consumer services, financial, healthcare, technology, oil and gas, utilities and industrials.

5.3.2 The Design of Executive Compensation Contracts

In this section, we analyse the design of executives' equity compensation. We find that long-term incentives take different forms, and usually, in the UK context, "long-term" refers to those plans that last for three years.

We identify three very different forms of compensation. Firstly, traditional share options are options on the company's stock with a non-zero strike price, so that the executive receives cash equal to the difference between the share price and the exercise price on the day they are exercised. Secondly, performance share plans (PSPs), also known as nil cost options, are options on the company's stock with a zero-strike price, which pay cash on the day they are exercised in a similar manner. Finally, share matching plans, also known as co-investment plans, are those in which executives invest part of their annual bonus in shares, and if long-term

performance conditions are met after three years, they receive a multiple of their initial investment in the form of shares. For some firms, this deferral is compulsory rather than voluntary. For example, in a "2:1" match, a deferral of 200,000 shares leads to the grant of an additional 200,000 shares if performance targets are met. Finally, long-term compensation may be given in the form of cash.

Performance targets can be further classified as the range of company performance in which rewards will vest: many plans have lower threshold targets, which are the minimum that must be attained for any rewards at all to vest, and upper threshold targets, at which the maximum possible reward is paid out. Further, performance targets can be classified as being relative to a benchmark or comparator group, or absolute.

Long-term incentive plans will not usually vest without the achievement of performance hurdles as assessed over a three-year performance period. These awards are made on a rolling basis and are frequently updated or modified depending on a company's objectives.

5.4 Methodology

5.4.1 Independent Variables

For independent variables, we use volatility in earnings per share (hereafter, EPS volatility) and volatility in total shareholder return (hereafter, TSR volatility). Furthermore, we also include corporate governance characteristics: board size, percentage of non-executive directors, firm age and CEO tenure which, potentially, have an influence on performance choices.

Following Zakaria (2012), we employ a set of control variables using free cash flow, market to book value and sales. We hypothesize that the choice of performance measure will be influenced by sales and firms will select market-based performance measures if they find

appropriate peers to compare their relative performance. Murphy (2000) finds that firms with higher level of growth opportunities are more likely to employ TSR over internal based measures, as TSR incentivizes manager of higher growth firms to smooth out any fluctuations.

All of these variables relate to the previous year as the observation. MTB is defined as the Market to Book value, using the MTBV datatype from Datastream.

Total shareholder returns and earnings per share are derived from the Return Index data published by Datastream. In addition, we use Datastream to collect the percentage of non-executive directors on the board. We collect data for board size from Bloomberg.

We follow Zakaria (2012) and define TSR volatility as the past Total Return volatility, measured quarterly, over the prior 36 months. We define EPS volatility as the volatility of EPS growth measured on a semi-annual basis, over the prior 36 months, since UK firms disclose EPS twice a year.

5.4.2 Sample Construction

Firms use a wide range of performance measures in CEO compensation and have different payment methods, which include matching plans, options and performance share plans.

Interestingly, most firms use the same performance measure category for all payment methods (i.e. options, restricted stock shares and matching plans). A few firms, however, employ different performance measure categories for different payment methods, for example, choosing EPS and TSR jointly in one long-term incentive plan while using EPS only in an additional long-term incentive plan.

For the purposes of the present analysis, if more than one long-term incentive plan exists, we include only firms which have the same performance measure category across all long-term incentive plans. This restriction loses 3% of the overall sample by firm-years.

Initially, our sample consists of 2970 active long-term incentive plans. For the purposes of descriptive statistics, we exclude plans that relate to one-off circumstance, e.g. mergers and acquisitions, spin-offs, retention plans and recruitment plans, since in most cases, these are specific to named executives, and many do not have any performance conditions attached.

We also exclude those firms which use a combination of TSR and some other performance measure (not including EPS or income-based measures) in a single year, and also, those firms which use a combination of EPS and some other performance measure (not including TSR) in a single year.

Additionally, to be included in a regression, a company must have valid corporate governance variables and valid data on total shareholder return and earnings per share for the prior three years for each year. The sample used for regression analysis is at the firm level and consists of 1931 firm-years.

5.4.3 Data Coding

The central testable prediction of the optimal contracting theory is that volatility in performance measures will affect the choice of performance measure. Accordingly, we test this using a multinomial logit model, in which the dependent variable, namely, the choice of performance measure, consists of four different categories: we code "EPS and TSR jointly" as category 0, TSR as category 1, EPS as category 2, and "neither EPS nor TSR" as category 3.

In the following analysis, the "neither EPS nor TSR" category includes plans where the performance measure is either qualitative or where it includes neither a TSR nor an earnings measure.

5.4.4 Model Estimation

Multinomial Logit Model

Let $P_{i,j}$ be the probability that the ith firm chooses performance measure *j* , given by

$$P_{i,j} = \Pr(R_{i,j} > R_{i,k}) \quad \text{for } k \neq j,\ j \in \{0,1,2,3\}\ , \tag{5.1}$$

where $R_{i,j}$ is the maximum utility attainable for firm i if it chooses performance measure j. Then,

$$R_{i,j} = \beta_j^{'} X_i, \varepsilon_{i,j} \tag{5.2}$$

where $\boldsymbol{X}_i$ is a vector of firm characteristics, and $\boldsymbol{\beta}_j$ is a vector of corresponding coefficients.

If the stochastic terms $\varepsilon i,j$ are independent and identically distributed, and follow the Weibull distribution, then the probability of performance choices can be modelled by the multinomial logit model:

$$P_{i,j} = \frac{\exp(\beta_j^{'} X_i)}{\sum_{j=0}^{3} \exp(\beta_j^{'} X_i)} \tag{5.3}$$

In this model, we use the firms that choose EPS and TSR jointly as a performance measure as the reference category and normalize the corresponding vector $\boldsymbol{\beta}_0 = \mathbf{0}$. Hence, the probability of firm i having (EPS and TSR jointly) as a performance measure in a compensation contract is given by:

$$P_{i,0} = \frac{1}{1+\sum_{j=1}^{3}\exp(\beta_j' X_i)} \tag{5.4}$$

And the probability of firm i having EPS only, TSR only, or (neither EPS nor TSR), is given by:

$$P_{i,j} = \frac{\exp(\beta_j' X_i)}{1+\sum_{j=1}^{3}\exp(\beta_j' X_i)} \text{ for } j = 1,2, \text{ and } 3. \tag{5.5}$$

We estimate this model using maximum likelihood. The estimated coefficient βj should be interpreted as the change in the probability of choice j (EPS, TSR, or neither EPS nor TSR) relative to the probability of choosing (EPS and TSR jointly), for a one-unit change in the independent variable.

The multinomial logit model can be seen as simultaneously estimating a binary logit model comparing among the dependent categories and reference category (Long, 1997). When estimating a multinomial logit model, we need to select a reference category to which the estimated coefficient will relate.

The results from the model will tell us whether the type of performance measure is influenced by volatility where $\mathbf{X}_i$ is a vector of firm characteristics. Our model is therefore:

$$\begin{aligned}\text{Prob. of Performance Measure}_{j,t} = {} & \alpha + \beta_1 \text{ EPS Volatility}_{i,t\to t-1} + \beta_2 \text{ TSR Volatility}_{i,t-1} \\ & \beta_3 \text{ Sales}_{i,t1-1} + \beta_4 \text{ Firm Tenure}_{i,t-1} + \sum_{j=1}^{p}\gamma_j \text{Corporate Governance Variables}_{i,t-1} \\ & +\text{n control variable}_{i,t-1} + \varepsilon_{i,t}\end{aligned} \tag{5.6}$$

for firm *i* at time period *t*, where $\varepsilon_{i,t}$ *is the error term*

5.5 Data Analysis and Empirical Results

5.5.1 Descriptive Statistics

5.5.1.1 Performance Measures Used in Long-Term Incentive Arrangements

Table 5.1 exhibits the breakdown of performance measures used in compensation contracts by plan type. We observe that EPS only, and TSR only, are the most popular performance metrics used in long-term incentive plans, followed by ROE and EBIT. Many firms in our sample use more than one performance measure, resulting in 5124 performance measures in 2970 plans. Market-based measures (i.e. TSR, Share Price and Total Property Return) together account for 72% of long-term incentives.

Panel A of Table 5.2 presents the breakdown of plans that use different performance target categories. When all plans are considered, Panel B reveals that 31% of plans choose EPS and TSR jointly as a performance measure, making this the most frequently employed category. Further, 42% of plans use only one performance measure, while in unreported statistics, we find that 51% use two measures, and 7% use multiple performance metrics.

Panel C presents statistics for the firms included in the regression, where we include only those which use TSR only, EPS only, TSR and EPS jointly or neither TSR nor EPS. When these are considered, 27% of the firms TSR only, 25% use EPS only, 39% of use EPS & TSR jointly, and 9% of plans use neither TSR nor EPS as a performance metric. This indicates that many plans are using EPS and TSR jointly as a performance target.

Panel A of Table 5.3 presents a summary of the statistics for firm characteristics for the sample period and reports the means, medians and standard deviations. The median (mean) board size is 9 (8.67), consistent with Ozkan (2007). The average (median) proportion of non-executive directors of 49.73% (47%) and the mean (median) value of EPS volatility is 0.30 (0.15). The

mean value of TSR volatility is 0.05, suggesting that EPS is a much more volatile measure compared to TSR.

Panel B of Table 5.3 reports the correlations between the independent variables of the sample. The correlation between the EPS volatility and TSR volatility is only -0.02. Turning to the correlations between the control variables, we find that the largest correlations are no higher than 39% (Panel B of Table 5.5.2). Thus, we infer that concerns of multicollinearity are not a major issue in the data.

Panel C of Table 5.3 reports summary statistics for compensation consultants. New Bridge Street is the most popular consultant, with a market share of 34.4%, followed by Deloitte (14.9%), Kepler (11.9%), PwC (9.8%), Towers (10.4%) and Mercer (1.2%). The "big six" remuneration consultants account for 83% of total market share, similar to the US, where the largest six remuneration advisors account for more than 67% of total market share (Cadman et al., 2010). Other smaller advisors include MEIS, EY, MM&K, Fit, Aon Hewitt, M C Lutyens, Pinsent, RSA Consulting, KPMG and Hay.

Table 5.1: Performance measures used in long-term incentive arrangement

	No.	TSR	Share price	EPS	ROE	TPR	Profit	Revenue	Cash flow	NAV	Other qualitative measures	Other accounting measures	No condition	Total
Performance share plans	2176	1721	38	1415	269	56	135	34	88	106	73	133	3	4063
Share options	347	114	8	244	15	0	16	6	0	5	0	7	8	423
Matching plans	447	190	5	234	69	9	32	3	31	26	28	11	5	638
Total	**2970**	**2025**	**51**	**1893**	**353**	**65**	**183**	**43**	**119**	**137**	**101**	**151**	**16**	**5124**

This table presents the number of plans falling into each respective category.

"No." indicates the number of plans, "TSR" indicates the use of Total Shareholder Return, defined as the increase in share price in addition to dividend income, 'Share price' indicates the use of share price alone, i.e. the increase in share price exclusive of dividend income. "EPS" indicates the use of earnings per share, "ROE" indicates the return on common equity as a measure, and "NAV" indicates the use of net asset value. "TPR" stands for total property return, in the case of Real Estate firms. "Total" indicates the total number of performance measures used across all plans so that one plan can have several performance measures.

Other qualitative measures include the use of non-financial/personal objectives in the executive compensation contracts (e.g. customer satisfaction, safety, health and strategy). Other accounting measures include all other accounting measures which cannot be classified in other categories.

Table 5.2: Performance measures categories in long-term incentive arrangements

		1	2	3	4	5	6		
		TSR only	TSR and other measure	EPS only	EPS and other measure	EPS & TSR	Neither TSR nor EPS	Total including all plans	Total of columns 1, 3, 5 and 6
Panel A	Performance share plans	508	379	289	98	792	111	2177	1700
	Options	71	7	193	0	69	36	376	369
	Matching plans	59	69	112	44	58	75	417	304
	Total	**638**	**455**	**594**	**142**	**919**	**222**	2970	2373
Panel B	Performance share plans	17.1%	12.8%	9.7%	3.3%	26.7%	3.7%		
	Options	2.4%	0.2%	6.5%	0.0%	2.3%	1.2%		
	Matching plans	2.0%	2.3%	3.8%	1.5%	2.0%	2.5%		
	Total	**21.5%**	**15.3%**	**20.0%**	**4.8%**	**30.9%**	**7.5%**	100.0%	
Panel C	Performance share plans	21.4%		12.2%		33.4%	4.7%		71.6%
	Options	3.0%		8.1%		2.9%	1.5%		15.5%
	Matching plans	2.5%		4.7%		2.4%	3.2%		12.8%
	Total	**26.9%**		**25.0%**		**38.7%**	**9.4%**		**100.0%**

This table presents the number of plans falling into each respective category.

"TSR only" indicates the number of plans that exclusively select TSR as a performance measure. "TSR and others" indicate the number of plans that use TSR in combination with other performance measures (e.g. net asset value, return on common equity, total property return and revenue). "EPS and TSR" indicates the number of plans that use TSR

and EPS jointly as a performance metric. “Neither EPS nor TSR” indicates the number of plans that consists of performance measures other than total shareholder return and earnings).

Table 5.3: Descriptive Statistics

Panel A: Firm Level Characteristics

Variable	Mean	Median	Std.-Dev	Variable	Mean	Median	Std.-Dev
EPS Volatility	0.30	0.15	1.15	% of non-executive directors	49.73	47.00	2.47
TSR Volatility	0.05	0.02	0.20	Ln (Free Cash Flow)	7.02	6.90	0.40
Market to Book	3.85	2.27	4.23	Ln (Sales)	6.75	6.60	1.74
Board Size	9.00	8.67	2.60	Ln (CEO Tenure)	1.38	1.50	0.95
Ln (Firm Age)	3.05	3.04	1.04				

Panel A reports summary statistics of the key variables used in the hypotheses tests to examine the impact of volatility on the performance choices.

Panel B: Correlation Matrix of Main Independent Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) EPS Volatility	1								
(2) TSR Volatility	-0.02	1							
(3) Market to book	-0.00	-0.02	1						
(4) Ln (Board size)	0.01	-0.03*	0.01	1					
(5) Non-executive directors %	-0.04*	-0.02	0.05**	0.22***	1				
(6) Ln (Sales £'000)	-0.10***	-0.03	0.01	0.30***	0.36***	1			
(7) Ln (Free cash flow)	-0.05**	-0.03	0.00	0.29***	0.25***	0.39***	1		
(8) Ln (CEO Tenure)	-0.05**	-0.00	-0.01	-0.09****	-0.11***	-0.16***	-0.06***	1	
(9) Ln (Firm Age)	-0.11***	0.02	-0.11***	-0.05***	-0.018	-0.00	0.00	0.13***	1

Panel B reports the pairwise correlation of the main independent variables. ***, **, * denote significance at 1%, 5%, and 10%.

Panel C: Compensation Consultant Statistics

Name of Advisor	**No of Plans**	**Percent**
Deloitte	377	14.96%
High New Bridge Street	868	34.44%
Kepler	301	11.94%
Mercer	32	1.27%
Others	430	17.06%
PwC	249	9.88%
Towers	263	10.44%
Total	**2520**	**100%**

Panel C reports breakdown of compensation consultants

Table 5.4 details the multinomial logit regression results for the determinants of performance choices. In multinomial logit, the dependent variable is limited, hence its interpretation differs from that of an OLS regression coefficient. In order to test whether the volatility of a performance measure impacts the choice of performance measure category employed by the firm, in Model 1, we control for industry and the identity of the consultant, and in Model 2, we additionally control for plan effects (i.e. options, performance share plans, and matching plans). Therefore, in Table 5.5, we include marginal effects to clarify the magnitude effect of each variable. Marginal effects represent the change in the dependent variable that is produced by a unit change in the independent variable.

We observe from Table 5.2 that categorizing by the type of plan, in contrast to performance share plans, options are rarely used in this sample. Instead, many firms use nil-cost options that are categorized as performance share plans.

Table 5.4: Multinomial logit model estimating the probability of performance measures in compensation contracts

Multinomial logistic regression of performance measures in compensation contracts against EPS volatility, TSR volatility, board size, market to book, firm sales, % of non-executive dire, free cash flow, CEO tenure and firm age. All results are relative to the base category of (EPS and TSR jointly). "TSR vol" is the three-year volatility before plan adoption, "EPS vol" is the three-year volatility in EPS before plan adoption. Robust standard errors are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively. Industry dummies are included in both specifications. Detailed description of variable definitions can be found in Appendix A to Chapter 5.

	Model 1			**Model 2 (with Plan Dummies)**		
Variable	**TSR**	**EPS**	**Neither TSR nor EPS**	**TSR**	**EPS**	**Neither TSR nor EPS**
	Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**	**Column 6**
EPS vol	0.119***	-0.120**	0.051	0.116***	-0.115**	0.023
	(0.021)	(0.058)	(0.033)	(0.020)	(0.056)	(0.037)
TSR vol	-3.673***	-2.193	-1.726	-3.935***	-2.218	-1.140
	(1.304)	(1.334)	(1.642)	(1.349)	(1.356)	(1.126)
Market to book	0.000	-0.001	-0.060**	0.002	0.000	-0.094***
	(0.004)	(0.004)	(0.025)	(0.004)	(0.004)	(0.032)
Ln (Board size)	1.341***	0.874***	0.154	1.417***	0.869***	0.294
	(0.323)	(0.307)	(0.427)	(0.330)	(0.322)	(0.433)

Non-executives%	0.024***	-0.021***	-0.012	0.025***	-0.019***	-0.007
	(0.005)	(0.005)	(0.008)	(0.005)	(0.005)	(0.008)
Ln (Sales)	-0.362***	-0.035	-0.219***	-0.348***	-0.015	-0.181**
	(0.059)	(0.060)	(0.084)	(0.059)	(0.062)	(0.089)
Ln (Free Cash Flow)	0.550***	-0.687***	-0.107	0.638***	-0.604***	-0.238
	(0.202)	(0.218)	(0.357)	(0.210)	(0.220)	(0.345)
Ln (Tenure)	0.201***	0.225***	0.239*	0.194***	0.228***	0.131
	(0.066)	(0.076)	(0.127)	(0.069)	(0.079)	(0.132)
Ln (Firm Age)	-0.324***	0.135*	-0.388***	-0.316***	0.152**	-0.381***
	(0.0634)	(0.074)	(0.121)	(0.064)	(0.075)	(0.133)
Industry						
Basic Material	0.586**	-1.657***	-0.994**	0.707***	-1.570***	-0.685*
	(0.264)	(0.471)	(0.458)	(0.270)	(0.461)	(0.411)
Consumer Goods	-0.501**	0.592***	-16.03***	-0.428*	0.608***	-16.37***
	(0.246)	(0.199)	(0.240)	(0.251)	(0.205)	(0.276)
Financials	1.846***	0.696**	1.959***	1.782***	0.700**	2.083***
	(0.307)	(0.346)	(0.363)	(0.314)	(0.354)	(0.389)
Healthcare	0.833**	-1.068*	-16.07***	0.898**	-1.007*	-16.52***
	(0.364)	(0.592)	(0.375)	(0.362)	(0.589)	(0.383)
Industrials	-0.921***	-1.495***	-2.198***	-0.853***	-1.455***	-2.041***
	(0.185)	(0.202)	(0.370)	(0.188)	(0.204)	(0.382)
Oil & gas	0.183	-0.830*	-15.93***	0.218	-0.793*	-16.59***
	(0.328)	(0.470)	(0.418)	(0.319)	(0.467)	(0.461)
Technology	-1.278***	0.471*	-0.255	-1.079***	0.532**	-0.307
	(0.365)	(0.260)	(0.390)	(0.370)	(0.269)	(0.409)
Utilities	0.906***	-2.116***	-1.733	0.969***	-1.956**	-1.293
	(0.315)	(0.780)	(1.078)	(0.329)	(0.797)	(1.107)
Consultant dummies						
HNBS	0.729***	-0.447**	-1.092***	0.781***	-0.403*	-1.009***
	(0.224)	(0.202)	(0.315)	(0.228)	(0.206)	(0.330)
Kepler	0.837***	-0.080	-1.524***	0.873***	-0.062	-1.446**
	(0.256)	(0.247)	(0.577)	(0.261)	(0.251)	(0.574)
Mercer	0.243	2.388***	2.799***	0.170	2.327***	2.974***
	(1.230)	(0.806)	(1.019)	(1.380)	(0.837)	(1.075)
Other	0.905***	-0.622**	0.247	0.926***	-0.600**	-0.323
	(0.278)	(0.278)	(0.326)	(0.283)	(0.292)	(0.358)
PwC	0.805***	-0.237	-0.702	0.814***	-0.212	-0.977**
	(0.277)	(0.269)	(0.461)	(0.284)	(0.277)	(0.488)
Towers	-0.228	-1.132***	-0.994***	-0.153	-1.163***	-1.168***
	(0.268)	(0.253)	(0.367)	(0.271)	(0.259)	(0.448)
Constant	-5.406***	3.886**	3.141	-6.032***	3.659**	5.752**
	(1.407)	(1.546)	(2.529)	(1.512)	(1.635)	(2.541)
Plan types dummies				Yes		
Observations	1931			1931		
Log-likelihood	-1834			-1767		
Pseudo R-squared	0.230			0.263		

Table 5.5: Marginal effects of the impact of volatilities on performance choices

Marginal effects of the impact of volatilities and corporate governance variables on performance choices in compensation contracts for Model 1. Marginal effects represent the effect of a unit change in the variable on the probability of an outcome (EPS, TSR, EPS and TSR, Neither EPS nor TSR).

	TSR	EPS	TSR & EPS	Neither TSR nor EPS
Variable	**Column 1**	**Column 2**	**Column 3**	**Column 4**
EPS vol	0.035***	-0.026***	-0.008	-0.000
	(0.013)	(0.009)	(0.007)	(0.008)
TSR vol	-0.692**	-0.091	0.783**	-0.000
	(0.341)	(0.203)	(0.329)	(0.007)
Market to book	0.000	-0.000	0.000	-0.000
	(0.005)	(0.003)	(0.007)	(0.015)
Ln (Board size)	0.248***	0.044	-0.291**	-0.001
	(0.067)	(0.048)	(0.145)	(0.121)
Non-executives %	0.007***	-0.005**	-0.002	-0.000
	(0.001)	(0.002)	(0.002)	(0.004)
Ln (Sales)	-0.080***	0.018**	0.061***	-0.000
	(0.030)	(0.008)	(0.014)	(0.021)
Ln (Free cash flow)	0.171***	-0.140**	-0.029	-0.000
	(0.049)	(0.055)	(0.048)	(0.043)
Ln (Tenure)	0.030	0.020	-0.052***	0.000
	(0.024)	(0.015)	(0.014)	(0.031)
Ln (Firm Age)	-0.082*	0.042***	0.0412	-0.000
	(0.049)	(0.011)	(0.028)	(0.075)
Industry dummies				
Basic materials	0.248***	-0.196***	0.006	-0.058***
	(0.053)	(0.029)	(0.052)	(0.021)
Consumer goods	-0.115***	0.203***	0.005	-0.093***
	(0.036)	(0.040)	(0.041)	(0.016)
Financials	0.256***	-0.101***	-0.257***	0.101***
	(0.048)	(0.034)	(0.036)	(0.036)
Healthcare	0.307***	-0.170***	-0.043	-0.093***
	(0.0741)	(0.042)	(0.071)	(0.016)
Industrials	-0.081**	-0.144***	0.300***	-0.074***
	(0.032)	(0.026)	(0.034)	(0.016)
Oil & gas	0.134*	-0.116**	0.074	-0.093***
	(0.078)	(0.049)	(0.076)	(0.016)
Technology	-0.208***	0.185***	0.036	-0.014
	(0.037)	(0.054)	(0.055)	(0.026)
Utilities	0.345***	-0.218***	-0.047	-0.079***
	(0.074)	(0.029)	(0.071)	(0.021)
Consultant dummies				
HNBS	0.184***	-0.126	-0.054	-0.004
	(0.067)	(0.139)	(0.201)	(0.386)
Kepler	0.183*	-0.078	-0.099	-0.005
	(0.096)	(0.148)	(0.236)	(0.455)
Mercer	-0.150**	0.495	-0.363***	0.019
	(0.073)	(1.616)	(0.093)	(1.648)
Other	0.237	-0.160*	-0.077	0.000
	(0.160)	(0.092)	(0.061)	(0.041)
PwC	0.187***	-0.101	-0.082	-0.003
	(0.059)	(0.126)	(0.185)	(0.324)
Towers	0.012	-0.167	0.158	-0.003
	(0.072)	(0.133)	(0.105)	(0.280)

5.5.2 Empirical Results

5.5.2.1 Multinomial Logistic Regression

Table 5.4 reports the results of the multinomial logit model with four performance choices. The R^2 of 0.23 is in line with the previous studies of Zakaria (2012) and Crespi et al. (2004).

In Model 1, Column 1 reveals that firms are significantly more likely to choose TSR only rather than TSR and EPS jointly if they have higher EPS volatility. Additionally, firms are significantly less likely to use TSR only rather than TSR and EPS jointly if they have higher TSR volatility.

In Column 2, relating to the selection of EPS only, we find a negative and highly significant coefficient for EPS volatility, indicating that firms are less likely to use EPS only, over the alternative of EPS and TSR jointly, when firms have volatile EPS. Our findings are consistent with Lambert and Larcker (1987) and Sloan (1993), who argue that firms prefer to choose performance measures that are less volatile. This is also in line with the predictions of the optimal contracting theory, suggesting that volatility has a significant role in the choice of performance measure. However, we do not find evidence of an association between the probability of choosing neither TSR nor EPS and the volatilities of EPS and TSR.

Column 1 shows that the coefficient of sales is negatively associated with the selection of TSR only and neither EPS nor TSR category relative to reference category so that firms with higher sales are significantly less likely to use TSR alone. It could be argued that as large firms tend to be pioneers of innovative designs (Kole, 1997), and are more likely to include several different performance measures in their remuneration contracts.

De Angelis and Grinstein (2015) compare the likelihood of using either market-based or accounting-based measure for US firms, in contrast to our methodology of comparing to a

reference group of EPS and TSR together. While they find that firms with longer CEO tenure are more likely to use accounting based measures, we find that firms with longer CEO tenure are more likely move away from using EPS and TSR jointly, to using TSR alone or EPS alone. We speculate that this may be because CEOs dislike dual targets and that longer tenure gives them more influence in the pay-setting process. One possible explanation of this result could be that their study considers a different dataset from a separate demography.

Our findings also show that firms rely more on accounting-based measures, and less on TSR alone, as firm age increases. These are in line with De Angelis and Grinstein (2015), who likewise find that young firms tend to use market-based measures rather than accounting measures in performance contracts. They argue that this is in line with optimal contracting theory since market value is a better indicator of long-term outcomes than current-year accounting measures.

The coefficients of market to book ratio are insignificant in Column 1 and Column 2, indicating that firms with higher growth opportunities have no clear preference for choosing EPS only or TSR only.

Firms with a higher percentage of non-executive directors on the board are less likely to favour EPS only but are more likely to favour TSR only relative to the base category. These results suggest that firms with a higher proportion of non-executive directors on the board are motivated to employ TSR, either alone, or in conjunction with EPS, as it is in the greater interest of shareholders.

Concerning consultant-specific effects, the reference group used in the present study for the identity of the remuneration advisor is “Deloitte”. Based on the results in Column 1, firms that use HNBS, Kepler, PwC and the “Others” category as their remuneration consultants are more likely to employ TSR only as a performance measure, relative to Deloitte. This is in line with

Kuang et al. (2014), who find that Deloitte is less likely to use TSR only than New Bridge Street or Towers Perrin.

However, firms that hire HNBS, Towers and consultants in the "Others" category are less likely to favour EPS over EPS and TSR jointly, relative to Deloitte. Finally, we detect a significantly positive association between the choice of Mercer and the choice of neither TSR nor EPS relative the base category. These findings strongly suggest that compensation consultants play an influential role in the design of remuneration contracts, and indicates the operation of normative isomorphism, as consultants who provide services to multiple firms use similar performance metrics.

Turning now to industry-specific factors, the reference category used is the "consumer services" group. Basic Materials and Utilities are significantly more likely to choose TSR only, and less likely to choose EPS only, than EPS and TSR jointly. Consumer Goods and Technology firms are significantly more likely to choose EPS only over EPS and TSR jointly. Financials are significantly more likely to choose TSR only, and EPS only, and neither EPS nor TSR than (EPS and TSR jointly), whereas the reverse is true for Industrials. Finally, Oil & Gas are significantly less likely to choose EPS only over EPS and TSR jointly.

Since these industry dummies are significant after controlling for all the other independent variables, this provides strong evidence for norms operating inside distinct industries, so that normative isomorphism is one of the key influences on the choice of the performance measure.

Broadly speaking, these results do not vary when controlling for plan type as shown in Columns 4, 5 and 6.

5.5.2.2 Marginal Effects

Addition to multinomial logit coefficient and the levels of significance, we have also shown the marginal effects, evaluated at the mean, of a change in the independent variable in Table 5. The marginal effects display the relative importance of each explanatory variable in predicting the probability of each event occurrence. For a dummy variable, marginal effects show by how much the probability of performance choices will change with a change in a dummy variable; while for a continuous variable, they show how much the probability will change with a one-unit change in the value of the independent variable.

In Table 5.5, Column 1 reveals that the estimated marginal effect of EPS volatility on TSR only is 0.035. This implies that an increase of 1 unit in 3-year earnings per share volatility raises the probability of choosing TSR only by 3.5 percentage points. The results in Column 2 show that a 1-unit increase in 3-year EPS volatility results in 2.6 percentage points decreases in the probability of choosing EPS only as performance criteria; this result is statistically significant at the 1% level. The pattern of results observed in Model 1 and Model 2 is in line with the optimal contracting hypothesis, since under optimal contracting theory, the more volatile the performance measure, the less likely it is to be chosen as a performance measure. Hence, volatility in EPS impacts the choice of performance measure as seen in both models. These results are in line with Banker and Datar (1989). Nevertheless, from Column 3, EPS volatility is not associated with the probability of choosing EPS and TSR jointly.

In Table 5.5, Column 3, the coefficient on TSR volatility for choosing EPS and TSR jointly is positive and statistically significant at the 1% level, so that a unit increase in 3-year TSR volatility is associated with a 78.3 percent increase in the probability of EPS and TSR jointly being selected. This shows that TSR volatility is an important factor in the selection of EPS in conjunction with TSR in compensation contracts. However, 3-year TSR volatility is not

significant in influencing the choice of EPS alone. This suggests that TSR alone is not viewed as a reasonable way to control for noise, consistent with Holmstrom (1982) and that high TSR volatility is countered by using EPS and TSR jointly as a guard against volatility in any one measure. The inclusion of an accounting measure in firms with higher values of TSR volatility, therefore, helps to filter some out noise in TSR.

The results in Table 5.5, Column 1 indicate that when remuneration advisors HNBS, Kepler and PwC consultant category provide advice to firms, the probability of selecting TSR only as a performance measure is 18%, 18% and 19% points higher respectively than Deloitte. However, relative to Deloitte, none of the other consultants shows a preference for EPS-contingent plans as shown in Column 2. A likely interpretation is that since Deloitte is an accounting firm, they tend to frequently recommend plans with accounting performance conditions.

By contrast, in Column 3, which relates to the choice of EPS and TSR jointly, only Mercer has a significant coefficient, so that the choice of Mercer is associated with a 36 percentage point reduction in the probability of selecting EPS and TSR jointly. Finally, in Column 4, relating to the choice of neither EPS nor TSR, none of the coefficients are significant. This is interesting since it shows that the institutional isomorphism identified above, pertains only to the issue of selecting TSR only. It appears that some advisors hold much more positive views on TSR only, but that they do not hold such strongly divergent on the other performance measures.

The probability of firms operating TSR-based plans in basic materials, financials, healthcare, oil and gas, and utility industries is 0.25, 0.26, 0.31, 0.13 and 0.34 higher respectively than firms in the consumer services group (reference category). However, the probability of employing EPS-contingent plans is 18% and 20% in technology and consumer goods industries

respectively. Technology firms prefer EPS based performance metrics and one possible interpretation is that executives are incentivized through methods which generate net income.

In case of Dummy variables in column 2 indicate that industries other than technology and consumer goods have a reduced probability of employing EPS exclusively than consumer services industry. More interestingly, no industry except industrials employs EPS and TSR jointly significantly more than the reference category. Furthermore, there exists a negative and statistically significant association between all industries except financial and the selection of neither EPS nor TSR. Further, untabulated results reveal that within the real estate and insurance sectors of the financial industry, the use of NAV and ROE measures is more prevalent.

According to column 1, a one-unit increase in log sales results in an 8 percentage points decrease in the probability of TSR being selected. While these results are not consistent with Zakaria (2012), who finds that large firms more often use TSR as a performance measure than EPS, her study was based on a much older sample, from 2003/2004. Also, sales has a strong marginal effect with an increase in the probability of EPS and TSR jointly by 6.1 percentage points for a one-unit increase in log sales. However, the marginal effect for non-executive directors (column 1, TSR only) and (column 2, EPS alone) is 0.007 and 0.005 percent respectively, showing that a greater presence of non-executive directors influences the choice of performance measure.

There is an interesting contrast in the effects of volatility in performance measures: whereas in columns 1 & 2, they are strongly significant in influencing the likelihood of EPS alone or TSR only being selected, in column 4, they play no role in the likelihood of neither EPS nor TSR being selected. Likewise, corporate governance factors and remuneration consultants do not significantly influence the probability of choosing neither EPS nor TSR category. This clearly highlights the significant impact of volatility on the choice of EPS and TSR being selected by

a firm. Nonetheless, the results also show that for firms within the financial industry, there is a 0.10 probability of choosing the neither EPS nor TSR category. This could be because of strong dependence on measures other than total shareholder returns or earnings within these industries.

Summarising the results from the marginal effects, our results suggest that out of all four categories, the use of TSR only in incentive contracts is industry-specific, and some consultants prefer using one performance measure relative to another. Industry forces drive the choice of accounting and financial performance measures, providing evidence of normative isomorphism in the design of pay packages. Firms with highly volatile TSR prefer to choose EPS and TSR jointly as a performance measure. One possible explanation is even if TSR is volatile, firms still use TSR along with an accounting measure to filter out noise in the market-based measure. The use of EPS and TSR jointly is influenced by firm size and in general is not specific to consultant and industry; only one consultant (Mercer) and financial industry show a strong negative association with selection of EPS and TSR jointly.

5.5.2.3 Robustness

In this section, we subject the previous results to a variety of robustness tests, all of them are available in the Appendix to Chapter 5. We use different measures of volatility: we use basic EPS and basic TSR volatilities instead of using cumulative EPS and cumulative TSR volatility, as many of these plans use basic EPS as a performance measure. The negative relationship between the choice of EPS as a performance measure and EPS volatility still holds. As shown in Table A.5.1 in the Appendix to Chapter 5, we also introduce industry-adjusted EPS and TSR volatility as a benchmark for the volatility measure. Interestingly, once these industry-adjusted measures are added, the main results remain qualitatively similar and show that firms with high values of TSR volatility are more likely to choose TSR over EPS and TSR jointly. The second

robustness test includes the use of time fixed effects. The main results again do not change qualitatively. Table A.5.4 in the Appendix to Chapter 5 presents the results when we use total assets to replace sales and find similar results on this alternative proxy. Finally, in Table A.5.5 in the Appendix to Chapter 5, we also include EPS along with net income measure and find consistent results that firms with higher volatile earnings are less likely to prefer earnings measures.

5.6 Design of Compensation Contracts

Next, we turn our attention to the design of compensation contracts. Every performance measure has hurdles with lower and upper threshold targets: for minimum vesting, firm performance needs to trigger the lower threshold target, and for full vesting, firms must meet the upper threshold target, as specified in the executive compensation contract. Vesting refers to the restriction on ownership of shares being lifted, meaning that executives can now transfer or sell the shares they are entitled to. For example, in a standard three-year long-term incentive plan, if the performance-contingent shares are offered in 2010, then executives can vest their shares in 2013 based on the subsequent achievement of performance targets. The amount of shares vesting depends upon where firm performance lies between the lower and upper threshold ranges. The value of these awards is usually determined by the share price on the day the share vests. Usually, from the date of the grant, executives have ten years before options or restricted stock shares lapse.

TSR is usually measured relative to a sector, or an index or a bespoke (i.e. hand-picked) group which the firm chooses. Frequently, the minimum reward is triggered if the firm's growth in TSR ranks in excess of the median (50^{th} percentile) group of companies in their comparator group, and for full vesting of equity, a firm's TSR growth should usually rank in the upper

quartile (75th percentile) relative to the comparator group over the three-year performance period. Vesting between these two limits is usually on a straight-line basis.

ABI (1999) recommended that EPS growth targets should be measured in absolute terms in executive compensation contracts. Generally, firms use either EPS absolute growth or EPS growth in excess of the Retail Price Index (RPI). EPS is most commonly expressed as a compound annual growth rate (CAGR) over a three-year performance period. As an example of EPS thresholds, a typical minimum performance hurdle is 3% p.a. (i.e. 9% over the performance period). The firm needs to have a minimum threshold of an average growth rate of 3% p.a. in order for the CEO to vest 25% of the equity. In order to get a maximum payout (100%) of the equity, firms typically have to exhibit an average growth rate of 6% p.a. (i.e. 18% over the performance period). Some firms use EPS growth benchmarks against RPI or CPI.

Different firms in the same sector may select different vesting criteria. As an example, in 2012 Atkins, a multinational firm in the support services industry, used only EPS as a performance measure in their LTIPs. In order to trigger the basic reward, Atkins should meet a minimum performance hurdle of 5% annual growth rate in EPS resulting in 25% of the equity vesting. By contrast, in 2012, Michael Page, another multinational firm in the support services industry, minimum performance hurdle was set at EPS growth of 5% per annum leading to 50% of the equity vesting.

5.6.1 Market-Based Measures

5.6.1.1 Peer Group Choices for TSR Only Contracts

Once firms decide to use market-based measures in their compensation contracts, the next key step is to select the peer group against which to compare their own performance. The

Government's Directors' Remuneration Report (2002) requires companies to disclose the peer firms used in determining executive compensation.

Table 5.6: Market-based performance targets and relative benchmarks

Market-based Measure	PSPs	Share options	Matching plans
Relative to TSR			
Bespoke (Disclosed)	614	25	56
Bespoke (Not Disclosed)	13	0	0
Bespoke index	142	5	17
Bespoke sector	25	0	13
Bespoke sector and index	36	6	0
Index	566	54	49
Sector	83	1	8
Sector and index	168	6	25
TSR (Underpin)	11	4	0
Absolute TSR			
Target share price	38	8	5
TSR absolute growth	63	13	22
Total	1759	122	195

The above table indicates the respective number of plans that use market-based measures in remuneration contracts. "Bespoke" indicates when group members are hand-picked by the firm. "Sector" and "index" indicate the use of a specific sector or index, respectively, as a comparator group (e.g. the FTSE 250 Support Services Index). "Bespoke sector" indicates the use of a peer group of companies from a specific sector (e.g. oil companies). "Bespoke sector" indicates the use of a peer group of companies from a specific sector (e.g. oil companies). "Bespoke index" refers to the use of specific companies from an index (e.g. choosing the 51st to 150th firms in the FTSE 350 as ranked by market capitalization). "Bespoke sector and index" is the use of self-selected firms from both a sector and an Index (e.g. the FTSE All Share Media companies excluding FTSE 100 participants). "Sector" indicates the use of specific sectors as a comparator group (e.g. Media/Mining). "TSR absolute" refers to the absolute growth in total shareholder returns. "Target share price" refers to the achievement of a specific target share price. "TSR underpin" refers to when it is used as a precondition with another performance measure.

Table 5.6 shows a breakdown of benchmarks relating to TSR as a performance measure. The results indicate that 34% and 32% of the plans use bespoke (disclosed and undisclosed) and index TSR, respectively, to proportion the vesting of equity compensation. It is easier for firms to choose indices, as this requires less effort than the self-selection of peer groups. However, choosing the right peer group is crucial, otherwise, it will introduce volatility to the payout, eventually demotivating executives.[40]

[40] This is discussed in more details by Kapinos et al. (2014) in the industry paper titled, Relative Total Shareholder Return (TSR) Plan Design Across the Atlantic, *Aon*

On the other hand, only 4.7% of firms use TSR absolute growth as a performance measure within their equity plans. The results also show that it is more common that TSR is subject to comparison with a peer group than a specific rate of increase (i.e. absolute TSR growth) in all types of long-term incentive arrangements. One possible explanation is that absolute TSR does not take into account the general movements in the market and is not a true reflection of executives' effort (Barty and Jones, 2012). Infrequently, some firms also use a specific share price figure in their long-term incentive plans. Only 10% of plans use both sector and index together as a relative benchmark. Firms in the general retail, travel and leisure, media and real estate investment sectors more commonly use sectors as a TSR peer group.

Next, we analyse the comparator groups within the components of long-term incentive plans, where we find that many firms use bespoke peer groups in their plans. We further break down the different market indices to study the various peer group used in long-term incentive plans.

Table 5.7: Comparator Groups (Index) in Relative to TSR Plans

Index	PSPs	Share options	Matching plans
Small Cap	115	8	17
FTSE 100	102	3	4
FTSE 250	277	18	20
FTSE 350	32	12	5
FTSE All Share	22	7	0
Others (HSBC /Morgan Stanley)	18	6	3
Total	566	54	49

Table 5.7 summarizes the comparators used by companies to benchmark their own TSR performance. "FTSE 250" refers to the firms in the FTSE 250 UK Index; similarly, "FTSE 100", "FTSE 350" and "FTSE Small Cap" refer to the firms in the FTSE 100, FTSE 350 Index and FTSE Small Capitalization Index, respectively. "Others" refers to firms that use alternative categories of the index (e.g. HSBC/Morgan Stanley Index). Firms may have more than one plan, each of which may reference a different comparator group.

https://www.radford.com/home/insights/articles/2014/relativ.e_tsr_plan_design_across_the_atlantic.asp [accessed on July 21, 2016].

Table 5.7 shows that 47% of the plans in the sample use the FTSE 250 peer group. Only 16% of plans choose TSR relative to the FTSE 100 Index, and interestingly, 21% of the plans are identified as using FTSE Small Cap peer group, so that the FTSE 250 peer group is the most widely used comparator group choice in compensation contracts.

5.6.1.2 Vesting Levels in TSR Based Contracts

After making the choice of performance measure and peer group, firms choose payouts at different levels of performance. While it is common for US companies to have a maximum payout between 100% and 200% of base salary, the payout policy for UK firms rarely exceeds 100% of base salary.[41] According to ABI guidelines, vesting conditions in performance measures should be fully transparent, explained and linked to the achievement of shareholders' value (ABI, 2013).

Table 5.8

Panel A: The distribution of vesting levels at median threshold and upper quartile targets in LTIP schemes.

Median threshold vesting level	PSPs	Share options	Matching plans	Upper quartile vesting level	PSPs	Share options	Matching plans
0.00%-10.00%	44	4	16	50.01%-60.00%	0	0	0
10.01%-20.00%	217	3	46	60.01%-70.00%	32	0	4
20.01%-30.00%	1303	72	117	71.01%-80.00%	161	6	28
30.01%-40.00%	93	26	8	81.01%-90.00%	204	17	32
40.01%-50.00%	57	10	8	91.01%-100.00%	1329	95	131
Not Disclosed	25	0	0	Not Disclosed	16	0	0
Complex	6	3	0	Complex	6	0	0
Single threshold	3	0	0	Single threshold	0	0	0
Underpin	11	4	0	Underpin	11	4	0
Total	1759	122	195	Total	1759	122	195
0% vesting	37	4	16				
25% vesting	951	45	78	100% vesting	1162	84	118

Minimum vesting of awards ranges from 0% to 50% after meeting lower threshold targets. Vesting at upper quartile ranges from 60% to 100%. "Single Threshold" refers to firms using only a single threshold hurdle in their

plans. “0% Vesting” refers to contracts which assign a zero percent vesting of equity for the achieving median TSR performance. “Upper quartile vesting levels” presents the percentage of equity which vests when TSR performance is at least equal to the upper quartile of the comparator group’s TSR. Most plans set 100% equity vesting if firms’ performance is at least equal to the upper quartile of the comparator group. The remaining plans, where less than 100% of the equity vests at this level, are here classified as “Outperformance TSR plans” and are detailed in Panel B below. “Underpin” refers to the situation in which TSR is used as an initial indicator in conjunction with another performance measure.

Panel A of Table 5.8 documents the vesting level of equity at the median and upper quartile threshold performance with respect to the comparator group’s TSR. As discussed earlier, performance at least equal to the median of the peer group is frequently used by firm as a minimum performance threshold.

Table 5.8.

Panel B: Outperformance TSR plans

Maximum Vesting Levels	PSPs	Options	Matching plans
Upper Quintile	177	13	17
Upper Decile	79	4	9
Outperformance Over the Index	244	21	26
Outperformance Over the Median	97	0	25

Table 5.8, Panel B reports the breakdown of plans where TSR performance criteria for maximum vesting is above the upper quartile of comparator groups’ TSR.

As shown in Panel A in the above table, there is a wide variation in the percentage of equity which vests if the firm’s relative TSR places it in at least the 50th percentile rank over a three-year performance period. In 2.7% of our plans, 0% of the award vests at this level. 3% of plans set between 0% to 10% to vest at this level, and 72% of plans set between 20% and 30% of equity to vest at this level. Of these, 52% of plans set exactly 25% of equity to vest, making it the most popular vesting level used by these firms. By contrast, in 4% of our plans, exactly 50% of the award vests at this level. This implies that two firms could set different minimum vesting percentages of equity at median performance relative to the comparator group, so that the firm with the lower percentage of equity vesting at the minimum vesting threshold has the tougher performance conditions, provided they use the same peer group.

The upper quartile vesting levels reveal that 66% of the plans' awards permit maximum payout (full vesting) if the TSR of the company exceeds the performance of 75% of the comparator group (upper quartile) over a three-year performance period, while only 9% of plans allow between 70% and 80% of equity to vest after meeting upper quartile performance. This clearly suggests the presence of either normative or mimetic isomorphism, since a high proportion of firms choose to adopt identical practices in this regard.

There exists diversity within the LTIP plans awarded by firms: the presence of similar performance measures but with different comparator groups introduces a considerable variation in the median and upper quartile threshold vesting in practice, adding further complexity to the design of compensation contracts, even though vesting levels do not vary widely if we break down these long-term incentive plans.

The term "underpin" functions as a threshold or hurdle. In cases where firms have two or more performance measures, one of them may be designated as an "underpin" so that the underpin performance target must be achieved before any of the awards will vest. As an example of this, consider Dechra Pharma that granted a performance shares plan in 2010 with a primary EPS target, and a TSR "underpin" performance target. The underpin TSR performance target required TSR performance to be at least equivalent to the median group of companies, and once this was met, the EPS performance measure with lower and upper threshold targets came into operation. In the case that the TSR underpin target was not met, no equity would vest, even if the EPS upper threshold target was attained.

As described here earlier, many plans employ a standard set of TSR growth thresholds: the initial vesting threshold is set to the median of the comparator group, and the upper vesting threshold is set to the upper quartile of the comparator group. Away from these standard settings, Panel B of Table 5 shows the alternative upper thresholds. For example, Wincanton in

2010 selected an upper threshold of TSR to be greater than or equal to 20% per annum in excess of the FTSE 250 Index for maximum payout and so is included in the "Outperformance over the Index" category. In some plans, the maximum threshold is above the upper quartile of the comparator group, usually, the upper quintile or decile, while for others, some firms choose plans in which growth in TSR should be equal to the median plus an additional margin, in order to trigger maximum payout. Panel B of Table 5.8 reveals that that out of 1759 performance share plans, 244 use outperformance relative to an index in order for the maximum payout to vest. In contrast, 177 plans require firms' TSR growth relative to the group of companies to be in the upper quintile for the maximum vesting. In contrast to Zakaria (2012) and Pass et al. (2000), there has been a shift in the landscape of remuneration contracts, as firms increasingly opt for TSR performance criteria that set performance beyond the upper quartile for maximum vesting.

5.6.2 Accounting-Based Measures

5.6.2.1 Breakdown of Types of EPS

Table 5.9: Type of EPS plans (performance share plans/options/matching plans)

	Adjusted EPS	Diluted EPS	Underlying EPS	Basic EPS	Cumulative EPS	Normalized EPS	Aggregate EPS	Relative RPS	Underpin	Total
Real EPS Growth	116/34/12	49/4/6	26/4/0	486/108/118	8/0/1	20/6/5	0/3/0	0/0/0	32/4/6	737/163/148
Absolute EPS Growth	83/5/15	22/2/5	15/0/8	169/38/32	17/0/0	11/0/0	2/0/0	11/0/0	0/0/0	330/45/60
Target EPS figure	59/0/7	3/2/0	17/0/0	228/32/10	24/6/9	0/0/0	17/0/0	0/0/0	0/0/0	348/40/26

Table 5.9 shows the different forms of EPS used by firms in their plans.

In a similar manner to the TSR targets analysed previously, EPS targets also have initial and maximum vesting thresholds which function in a similar way. The principal difference arises in that EPS target is usually absolute, and do not refer to a comparator group, as with TSR targets. These descriptive statistics indicate that firms incorporate diverse performance targets, and as before, lower or upper threshold targets often have different vesting levels of equity.

We note from Table 5.9 that within long-term incentive arrangements, there are different definitions of EPS owing to different calculation methods, though most firms prefer using basic earnings per share, 68% of plans choose a performance target based on basic EPS growth in excess of RPI, while 55% use EPS absolute growth over a three-year performance period. After basic EPS, the next most popular performance measure is adjusted earnings per share, with 17% of the plans employing this, and about 6% of plans use diluted EPS as performance criteria. Diluted earnings per share denote the conversion of dilutive securities into common stock, resulting in an adjustment of the number of shares outstanding as well as earnings. Lastly, 4% of plans employ underlying EPS-contingent compensation arrangements. Unlike TSR, EPS is measured in absolute terms rather than relative to the companies. Relative EPS is less common as firms find it difficult to find a peer group for which the profit growth is similar to that of the company.

5.6.2.2 EPS targets and Vesting levels

Next, Table 5.10 reveals that while the minimum threshold range is relatively compressed, the upper threshold range is more dispersed, whether real or absolute terms are used.

Turning first to minimum thresholds, Panel A of Table 5.10 reports minimum thresholds for EPS where these are stated in real terms, as an RPI + x% figure. 82% of plans lie in the range of RPI + 2% p.a. to RPI + 6% p.a., and a small number of plans do not disclose vesting levels within their compensation contracts.

Table 5.10. Panel A: Distribution of EPS growth in excess of RPI required for minimum and maximum threshold (in per annum equivalent)

Minimum threshold targets (RPI + x %)	PSPs	Options	Matching plans	Maximum threshold targets (RPI + x %)	PSP	Options	Matching plans
0.01% to 0.99%	8	0	0	1.00% to 1.99%	1	6	0
1.00% to 1.99%	14	0	0	2.00% to 2.99%	3	7	15
2.00% to 2.99%	222	64	62	3.00% to 3.99%	1	1	0
3.00% to 3.99%	196	7	47	4.00% to 4.99%	24	11	20
4.00% to 4.99%	132	38	11	5.00% to 5.99%	27	10	22
5.00% to 5.99%	71	8	3	6.00% to 6.99%	39	20	10
6.00% to 6.99%	24	2	4	7.00% to 7.99%	86	29	13
7.00% to 7.99%	6	7	0	8.00% to 8.99%	46	11	0
8.00% to 8.99%	6	4	0	9.00% to 9.99%	156	27	24
9.00% to 9.99%	13	3	0	10.00% to 10.99%	45	4	7
10.00% to 10.99%	0	0	0	11.00% to 11.99%	124	4	6
11.00% to 11.99%	4	0	0	12.00% to 12.99%	27	0	14
12.00% to 12.99%	1	4	0	13.00% to 13.99%	8	21	1
13.00% and above	3	0	0	14.00% to 14.99%	64	6	7
Not disclosed	4	0	0	15.00% to 15.99%	20	2	3
No lower threshold	1	22	15	16.00% and above	31	0	0
Relative to the Index	0	0	0	Not disclosed	3	0	0
Underpin	32	4	6	Underpin	32	4	6
Minimum vesting levels				Maximum vesting levels			
1.00% to 9.99%	41	2	25	90.00% to 99.99%	737	159	148
10.00% to 19.99%	71	2	9	Not disclosed	0	0	0
20.00% to 29.99%	491	97	58	Complex	0	0	0
30.00% to 39.99%	56	20	18	Single threshold	0	0	0
40.00% to 49.99%	29	16	17	Underpin	32	0	6
Not Disclosed	14	0	0	Total	737	163	148
Complex	0	0	0				
Single Threshold	3	22	15	0% Vesting	26	2	12
Underpin	32	0	6	25% Vesting	376	77	14
Total	737	163	148				

Table 5.10. Panel B: Distribution of EPS absolute growth required for minimum and maximum threshold (in per annum equivalent)

Minimum absolute threshold targets	PSPs	Options	Matching	Maximum absolute threshold targets	PSP	Option	Matching
0.01% to 0.99%	1	0	0	4.00% to 4.99%	0	3	3
1.00% to 1.99%	0	0	0	5.00% to 5.99%	8	0	0
2.00% to 2.99%	18	8	8	6.00% to 6.99%	2	5	1
3.00% to 3.99%	21	12	17	7.00% to 7.99%	8	13	0
4.00% to 4.99%	86	6	5	8.00% to 8.99%	15	7	10
5.00% to 5.99%	78	10	11	9.00% to 9.99%	38	6	9
6.00% to 6.99%	26	0	8	10.00% to 10.99%	12	1	5
7.00% to 7.99%	19	4	7	11.00% to 11.99%	55	1	3
8.00% to 8.99%	9	0	0	12.00% to 12.99%	22	1	2
9.00% to 9.99%	28	4	4	13.00% to 13.99%	20	1	14
10.00% to 10.99%	4	0	0	14.00% to 14.99%	63	7	9
11.00% to 11.99%	3	0	0	15.00% to 15.99%	5	0	0
12.00% to 12.99%	1	0	0	16.00% to 16.99%	15	0	4
13.00% to 13.99%	0	0	0	17.00% to 17.99%	0	0	0
14.00% to 14.99%	8	0	0	18.00% to 18.99%	0	0	0
15.00% to 15.99%	7	0	0	19.00% to 19.99%	20	0	0
Not disclosed	8	0	0	20.00% and above	28	0	0
Single threshold	2	1	0	Not disclosed	8	0	0
Relative to the Index	11	0	0	Relative to Index	11	0	0
Minimum vesting levels				Maximum vesting levels			
1.00% to 9.99%	34	3	6	90.00% to 99.99%	314	45	60
10.00% to 19.99%	50	6	3	Not disclosed	10	0	0
20.00% to 29.99%	191	12	33	Complex	6	0	0
30.00% to 39.99%	26	20	6	Single Threshold	0	0	0
40.00% to 49.99%	5	3	12	Underpin	0	0	0
Not disclosed	14	0	0	Total	330	45	60
Complex	8	0	0				
Single Threshold	2	1	0	0% Vesting	29	3	2
Underpin	0	0	0	25% Vesting	144	12	27
Total	330	45	60				

Panel A and B of Table 5.10 present the distribution of EPS growth corresponding to the minimum and maximum threshold target range.

Panel B of Table 5.10 documents the distribution of EPS absolute growth targets, as opposed to the real-terms growth targets presented in Panel A. 79% of the plans, have a minimum threshold hurdle range between 2% p.a. to 8% p.a.

Turning next to upper thresholds, Panel A of Table 5.10 reveals that 69% of the plans in our sample have an upper threshold target range of RPI + 7% p.a. to RPI + 15% p.a. with a particular concentration in the range of RPI + 9% p.a. to 9.99% p.a. These results are in line with Ward (2000), who finds that EPS growth plus RPI of 2% is most commonly used in incentive plans from 1994 to 1998, and also with Zakaria (2012), who finds that 68.1% of plans have a minimum vesting threshold in the range of RPI + 2% p.a. to RPI + 6% p.a. Zakaria (2012) does not disclose specific range data for upper thresholds. With regards to absolute targets in Panel B, 79% of plans have upper growth targets between 7% and 16.99%. The descriptive statistics of Zakaria (2012) show that during 2002/2003, less than half of plans with EPS based compensation contracts employed upper thresholds hurdles, showing that the use of upper threshold targets have increased over time, and overall targets are more demanding.

Table 5.10 additionally presents information on the level of equity which vests at the minimum EPS target. In Panel A, discussing real EPS targets, 62% of the plans have a vesting range of between 20.00% and 29.99%. Similar to the comparable results for TSR, minimum equity vesting has a particular peak at 25%, which is used by 44% of plans. In Panel B, concerning absolute EPS targets, 54% of plans have a vesting of between 20.00% and 29.99%, and there is a peak at 25%, used by 42% of plans. Overall, these results suggest that normative or mimetic isomorphism is not limited to the choice of performance measure but is also present in the setting of growth targets and equity vesting ranges.

5.7 Performance Target Achievements

Prior studies suggest that firms exhibit a bias in the selection of their TSR comparator group, choosing them in such a way as to make outperformance more likely and lead to greater vesting of equity. Consistent with the analysis in Lewellen et al. (1996) study, we examine the three-year return in firms which select different indices, in order to shed light on whether the different selection of relative TSR benchmarks helps executives achieve their minimum and maximum performance hurdles, and whether the selection of the FTSE 100, FTSE 250 or FTSE Small Cap indices was most beneficial for executives. It is easier to perform TSR calculation for firms which select a pre-defined market index, since firms which select bespoke comparator groups frequently have a global set of peers, making it difficult to calculate their TSRs individually. In the following analysis, we, therefore, exclude such companies from our sample and include only firms which choose a named index in their relative TSR plans.

Table 5.11: This table presents the breakdown of the number of plans achieving median or upper quartile performance thresholds of relative TSR benchmarks against the FTSE 100, FTSE 250, FTSE 350, and FTSE Small Cap, by year

	Year	Avg (Median) TSR Firm	Avg (Median) TSR Index	No. of plans	Targets not achieved	Median threshold targets achieved	Upper threshold targets achieved
FTSE 100	2007	0.56(0.61)	0.10(0.04)	14	6	2	6
	2008	0.52(0.51)	0.45(0.30)	23	11	2	10
	2009	0.51(0.49)	1.13(0.73)	14	8	2	4
	2010	0.65(0.79)	0.75(0.52)	15	4	2	9
	2011	0.52(0.54)	0.80(0.58)	21	9	6	6
	2012	0.38(0.35)	0.91(0.82)	18	12	5	1
	Total			105	50	19	36

	Year	Avg (Median) TSR Firm	Avg (Median) TSR Index	No. of plans	Targets not achieved	Median threshold targets achieved	Upper threshold targets achieved
FTSE 250	2007	0.59(0.64)	0.01(0.12)	23	8	5	10
	2008	0.55(0.71)	0.44(0.36)	27	14	3	10
	2009	0.58(0.59)	1.20(0.83)	36	16	7	13
	2010	0.51(0.57)	0.66(0.55)	37	15	11	11
	2011	0.57(0.65)	0.73(0.63)	40	15	10	15
	2012	0.42(0.32)	0.88(0.77)	37	24	4	9
	Total			200	92	40	68

	Year	Avg (Median) TSR Firm	Avg (Median TSR Index	No. of plans	Targets not achieved	Median threshold targets achieved	Upper quartile threshold targets achieved
FTSE 350	2007	0.36(0.48)	0.00(0.06)	4	2	2	0
	2008	0.35(0.49)	0.42(.32)	6	3	2	1
	2009	0.35(0.25)	1.18(0.81)	6	4	1	1
	2010	0.55(0.87)	0.68(0.52)	6	2	0	4
	2011	0.17(0.19)	0.74(0.60)	3	2	0	1
	2012	0.17(0.23)	0.88(0.77)	3	2	1	0
	Total			28	15	6	7

	Year	Avg (Median) TSR Firm	Avg (Median TSR Index	No. of plans	Targets not achieved	Median threshold targets achieved	Upper threshold targets achieved
FTSE Small Cap	2007	0.93 (0.98)	-0.13(0.17)	8	0	1	7
	2008	0.73(0.90)	0.32(0.22)	12	3	1	8
	2009	0.47(0.50)	1.21(0.72)	15	3	5	7
	2010	0.64(0.72)	0.57(0.42)	15	4	6	5
	2011	0.57(0.68)	0.49(0.39)	17	4	6	7
	2012	0.61(0.55)	0.63(0.55)	20	5	6	9
	Total			87	19	25	43

"Avg (Median) TSR Index" indicates the average (median) three-year change in total shareholder returns for the index. "Avg (Median) TSR Firm" indicates the average (median) of three-year change in total shareholder returns for all firms using the FTSE 100, FTSE 250, FTSE 350 and FTSE Small Cap indices, by year. "No. of plans" refers to the number of plans using a specific index. "Targets not achieved" represents the number of plans that do not achieve any performance hurdles in a particular year using a specific index. "Median threshold targets achieved" stands for the number of plans achieving the lower threshold hurdles only. "Upper threshold targets achieved" refers to the number of plans achieving upper threshold hurdles. A prior three-month averaging period has been used in the TSR calculations. Firms with unavailable data for the past and actual 3-year EPS (TSR) growth are excluded from our sample. In addition, we consider actual 3-year EPS (TSR) growth figures, so that the latest year considered is 2012. This results in a final sample which is different from that shown in Table 5.7.

Table 5.11 shows the number of plans which select a TSR benchmark relative to the FTSE 100, FTSE 250 or FTSE Small Cap indices. Many firms in their compensation contracts select the 50^{th} and 75^{th} TSR percentile ranking for minimum and maximum payouts, respectively, as shown previously. The findings above show that around half of the plans of firms that selected the FTSE 100 in 2007, 2008 and 2010 met the upper threshold targets in addition to the median threshold targets, and only 18% of plans achieve the median threshold hurdle while failing to attain the upper threshold hurdle.

The most popular index used by firms is the FTSE 250 with 47% of plans employing it. From the above table, we observe that on average 46% of plans do not achieve their median threshold targets, while 34% of such plans achieve both the median and the upper threshold targets. Only a few firms use the FTSE 350 index as a relative index, among whom, only 25% of plans meet both the median and the upper threshold targets, and 53% of plans do not even meet the median performance hurdle.

We also notice that an average TSR growth in FTSE Small Capitalization ranges from -0.13% to 0.63, as indicated by the Avg (Median) TSR Index column. From 2007 to 2012, we observe that there are high and lower TSR values, the results from Table 5.11 show that the firms do not achieve the initial performance hurdle with 2007 as an exception. More than 49% of the plans that use FTSE Small Cap as a comparator group attain both median and upper threshold

targets, so that among all indices, there is greater percentage of upper threshold targets achieved in plans which use the FTSE Small Cap as a relative Index.

Next, in Tables 5.12 and 5.13, we focus on target attainability for plans that employ EPS as a performance measure. RPI growth figures are collected from the National Statistics website.

Table 5.12.

Panel A: Descriptive Statistics of EPS Real/RPI growth targets

EPS real/ RPI growth	No. of plans	Mean	Standard deviation	First quartile	Median	Third quartile	Maximum
Initial threshold	511	4.42%	1.78%	3.00%	4.00%	5.00%	21.50%
Maximum threshold	511	10.29%	3.34%	8.00%	10.00%	12.00%	30.00%
Past 3-year EPS growth	511	14.41%	30.96%	0.16%	10.90%	20.62%	90.00%
Actual 3-year EPS growth	511	8.06%	22.46%	-3.06%	6.68%	15.90%	140.00%

Table 5.12

Panel B: The breakdown of number of plans achieving minimum or maximum performance thresholds of EPS real / RPI growth, by year

Year	No. of plans	Minimum threshold targets p.a.	Maximum threshold targets p.a.	Minimum threshold targets achieved	Minimum and maximum threshold targets achieved	Targets not achieved	Past 3-year EPS growth	Actual 3-year EPS growth
2007	74	0.083	0.143	10	28	36	0.050	0.080
2008	88	0.080	0.140	14	29	45	0.048	0.084
2009	82	0.045	0.095	16	45	21	0.163	0.108
2010	87	0.086	0.146	16	34	37	0.113	0.093
2011	91	0.092	0.152	11	19	61	0.097	0.047
2012	89	0.082	0.142	24	27	38	0.045	0.105
Total	511			91	182	238		

Table 5.13

Panel A: Descriptive Statistics of EPS absolute growth targets

EPS Absolute growth	No. of plans	Mean	Standard deviation	First quartile	Median	Third quartile	Maximum
Minimum threshold target	228	4.80%	3.17%	3.20%	4.00%	6.70%	20.00%
Maximum threshold target	228	10.93%	4.67%	9.00%	10.00%	15.00%	28.00%
Past 3-year EPS growth	228	23.63%	56.00%	1.75%	15.02%	26.00%	107.00%
Actual 3-year EPS growth	228	20.80%	28.90%	4.90%	16.14%	21.00%	150.00%

Table 5.13.

Panel B: The breakdown of a number of plans achieving minimum or maximum performance thresholds of EPS absolute growth, by year

Year	No. of plans	Minimum threshold targets p.a.	Maximum threshold targets p.a.	Minimum threshold targets achieved	Minimum and maximum threshold targets achieved	Targets not achieved	Past 3-year EPS growth	Actual 3-year EPS growth
2007	34	5.00%	10.00%	4	22	8	17.15%	15.25%
2008	39	5.00%	10.00%	3	23	13	16.30%	14.57%
2009	31	5.00%	10.50%	5	26	0	15.13%	15.50%
2010	45	5.00%	11.75%	5	33	7	12.15%	15.83%
2011	38	5.00%	12.00%	10	16	12	7.60%	10.80%
2012	41	5.50%	13.00%	5	18	18	7.85%	7.81%
Total	228			32	138	58		

"No of plans" refers to the number of firms using EPS performance measure in their plans. "Past 3-year EPS growth" is the earnings per share growth for each company over the past three years prior to the plan. "Actual 3-year growth" is the earnings per share growth for the company over the next three years after plan adoption. "Minimum threshold" is the median earnings per share growth of the minimum threshold target set by firms. "Maximum threshold" is the median earnings per share growth of the upper threshold set by firms. "Minimum threshold targets achieved" signifies the number of plans achieving lower threshold targets only. "Minimum and maximum target achieved" refers to the number of plans achieving both minimum and maximum threshold targets. "Targets not achieved" refer to number of plans achieving neither minimum nor maximum threshold targets.

The results in the Panel A of Table 5.12 indicate that on average, 46% of the plans in our sample do not meet a minimum performance hurdle. By contrast, 36% of the plans achieve lower and the maximum threshold targets. One exception is 2009 when 19% and 54% of the plans achieved minimum and maximum threshold targets due to lower RPI respectively. Looking at the 3-year past EPS growth, we observe that minimum threshold targets are set below three-year prior EPS growth in 2009, 2010 and 2011.

Panel B of Table 5.13 presents the results relating to absolute EPS targets. In contrast to firms using real EPS targets, we observe that firms using absolute EPS growth attain their upper and lower thresholds targets with greater ease; only 25% of plans do not meet lower or upper-performance hurdles. Panel A of Table 10 shows that there exists greater variance in minimum and maximum threshold targets, due to targets being widely spread over the sample. On average, minimum threshold targets do not vary much over time, and range between 5% to 5.5% p.a. from 2007 to 2012.

Interestingly, on average, firms using absolute EPS measures tend to set lower minimum EPS threshold targets compared to their actual past 3-year EPS growth results and in addition, there exists a difference in target attainability in firms using absolute EPS over firms which employ EPS in excess of RPI.

5.8 Conclusion

Using a comprehensive sample of 400 large firms from 2007 until 2015, we examine the influence of volatility and corporate governance variables on firms' choice of performance measures. We find that the choice of a performance measure is not arbitrary, but instead, corporate governance factors and the volatility of both EPS and TSR influence the choice of

firm performance measure. Consistent with the optimal contracting approach, we find that firms tend to choose performance measures which are less volatile, implying that contracts are designed optimally. Further, remuneration advisors and the volatility in performance measure neither influence the selection of TSR nor EPS category.

Some consultants exhibit a preference to select TSR, while other consultants prefer the use of EPS, so that consultant identity is an important factor in the choice of performance metrics in compensation contracts, providing evidence of normative isomorphism within executives' compensation contracts. Furthermore, firms with higher sales prefer to choose a combination of EPS and TSR as a performance metric, indicating that larger firms prefer to rely on a combination of EPS and TSR performance measures as key indicators of the firm's value creation.

This study provides an in-depth analysis of the design of executive contracts and the different plan characteristics of long-term incentive arrangements. We observe from our descriptive statistics that there has been a decline in the use of options, while performance share plans appear to remain a key element of long-term incentive plans.

Key findings from our descriptive analysis show that firms use various types of market-based measures. Among market-based measures, the use of relative TSR is most frequent, and the FTSE 250 is the most common Index employed in relative TSR plans. However, firms are increasingly setting stretching targets away from traditional benchmarking through the use of outperformance plans, in which maximum vesting is above the traditional median or upper quartile. Moreover, there also exists different target attainability within different TSR index, so that the FTSE Small Cap offers the greater potential for target attainment.

Our findings also indicate that firms use different versions of EPS and that growth in EPS can be measured in absolute terms or in growth in excess of RPI. We observe that a minimum

threshold range of 2% p.a. to 8% p.a. is most popular in plans using an EPS absolute growth target, while for plans using an EPS growth benchmark against growth in RPI, the target range of 2% p.a. to 6% p.a. is most popular. There exists a wider spread of upper threshold targets in plans that use EPS benchmark against growth in RPI compared to absolute EPS targets: the RPI targets are concentrated in the range of RPI + 7% p.a. to RPI +17% p.a., while EPS absolute growth targets mostly range from 7% p.a. to 15% p.a. After adjusting for the effect of RPI in EPS targets, we observe that minimum and maximum threshold targets are set lower in absolute EPS growth targets, and hence, achievement of targets is higher in firms using absolute EPS growth figures. Since the ABI guidelines provide no clear structure for determining the appropriate standards, we argue that this represents a case of mimetic isomorphism, in which firms copy each other' standards.

This study will reassure shareholders and institutional holders since we show that the choice of performance measure in compensation contracts tends to reflect optimal contracting. From a policy perspective, we find that remuneration advisors play an influential role in contract design and there exist many forms of isomorphism in one form or another, which arise from hiring consultants, selection of performance measures, setting targets and payout level.

APPENDIX TO CHAPTER 5

Variable Definition

This table provides a detailed description of the construction of all the variables used in this chapter.

Dependent Variable	Definition
Performance measure	0 if long-term incentives consist of EPS and TSR jointly, 1 if firms' incentive grants have only TSR condition, 2 if firms' incentive grants consist of EPS measure exclusively and 3 if firms' incentive grants contain neither EPS nor TSR condition

Independent Variables	Definition
TSR vol	The standard deviation in stock returns three-years before the plan adoption
TSR vol	The standard deviation in EPS growth three-years prior to the plan adoption
Market to book ratio	Book value of the common equity divided by the market value of the common equity
Firm Age	Firm Age is defined as the year the firm was founded and is a proxy of firm maturity. It is the natural logarithm of the difference between the years in consideration[42] and the year firm was founded plus one
Tenure	The natural logarithm of number of years served as the CEO and is a proxy of CEO experience
Non-executive directors %	Percentage of number of non-executive directors over total number of directors on board
Board size	Total number of directors on the board
Sales	Natural Logarithm of the firm's sales/turnover

[42] Note: In the case of our study, the sample is from 2010 to 2014, Thus, for example, for the firm which was founded in 2008 and the year of consideration being 2010, the firm age is (2010-2008+1) 3.

Table A.5.1: Robustness test

Multinomial logistic model estimating the effects of industry-adjusted EPS and TSR volatilities on performance measures

Multinomial logistic regression of performance measures in compensation contracts against industry-adjusted TSR, industry EPS volatility, TSR volatility, board size, market to book, firm sales, % of non-executive directors, free cash flow, CEO tenure and firm age. All results are relative to the base category of (EPS and TSR jointly). Robust standard errors are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	**TSR Column1**	**EPS Column 3**	**Neither EPS nor TSR Column 5**
	Multinomial logit model results	Multinomial logit model results	Multinomial logit model results
EPS vol	0.070**	-0.299***	0.009
	(0.033)	(0.105)	(0.050)
TSR vol	-3.749***	-0.560	-1.203
	(0.765)	(0.517)	(1.167)
Market to book	0.0014	-0.001	-0.059**
	(0.004)	(0.005)	(0.025)
Ln (Board size)	1.359***	0.869***	0.135
	(0.322)	(0.309)	(0.425)
Non-executives%	0.022***	-0.022***	-0.013*
	(0.005)	(0.005)	(0.008)
Ln (Sales £'000)	-0.342***	-0.025	-0.210**
	(0.059)	(0.060)	(0.082)
Ln (Free Cash Flow)	0.535***	-0.655***	-0.054
	(0.204)	(0.208)	(0.304)
Ln (Tenure)	0.165**	0.207***	0.225*
	(0.067)	(0.075)	(0.127)
Ln (Firm Age)	-0.346***	0.132*	-0.402***
	(0.063)	(0.075)	(0.120)
Constant	-4.969***	3.650**	2.947
	(1.395)	(1.496)	(2.229)
Industry effects	Yes		
Consultant effects	Yes		
Observations	1931		
Log likelihood	-1844		
Pseudo R-squared	0.23		

Please refer the footnote in Table 4, and Industry-adjusted TSR vol is the standard deviation of firm's stock returns growth minus the mean standard deviation of stock returns growth of the industry over three-year period before plan adaptation and EPS vol is standard deviation of firm's eps growth minus the mean standard deviation of eps growth of the industry over three-year period before plans.

Table A.5.2: Robustness test 2

Multinomial logistic model estimating the effects of basic EPS volatility and TSR volatility on performance measures

Multinomial logistic regression of performance measures in compensation contracts against basic EPS volatility, TSR volatility, board size, market to book, firm sales, % of non-executive directors, free cash flow, CEO tenure and firm age. All results are relative to the base category of (EPS and TSR jointly). Robust standard errors are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	**TSR**	**EPS**	**Neither earnings nor TSR**
	Column 1	**Column 2**	**Column 3**
	Multinomial logit model results	Multinomial logit model results	Multinomial logit model results
EPS vol	0.008***	-0.014**	0.005
	(0.002)	(0.006)	(0.004)
TSR vol	-0.397***	-0.178	-0.095
	(0.122)	(0.156)	(0.142)
Market to book	0.001	-0.002	-0.057**
	(0.004)	(0.004)	(0.025)
Board size	1.394***	0.795***	0.161
	(0.320)	(0.305)	(0.427)
Non-executives%	0.022***	-0.020***	-0.013
	(0.005)	(0.005)	(0.008)
Ln (Sales £'000)	-0.371***	-0.039	-0.219***
	(0.060)	(0.059)	(0.082)
Ln (Free Cash Flow)	0.533**	-0.575***	-0.121
	(0.215)	(0.196)	(0.313)
Ln (Tenure)	0.162**	0.232***	0.225*
	(0.067)	(0.076)	(0.127)
Ln (Firm Age)	-0.354***	0.150**	-0.409***
	(0.063)	(0.074)	(0.121)
Constant	-4.990***	3.195**	3.261
	(1.446)	(1.434)	(2.272)
Industry effects	Yes		
Consultant effects	Yes		
Observations	1931		
Log likelihood	-1834		
Pseudo R-squared	0.23		

Table A.5.3: Robustness test 3

Multinomial logit model estimating the probability of performance measures in compensation contracts with time dummies

Multinomial logistic regression of performance measures in compensation contracts against TSR volatility, EPS volatility, board size, market to book, firm sales, % of non-executive directors, free cash flow, CEO tenure and firm age. All results are relative to the base category of (EPS and TSR jointly). Robust standard errors are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	**TSR**	**EPS**	**Neither earnings nor TSR**
	Column 1	**Column 2**	**Column 3**
	Multinomial logit model results	Multinomial logit model results	Multinomial logit model results
EPS vol	0.117***	-0.138**	0.049
	(0.021)	(0.062)	(0.033)
TSR vol	-3.185**	-1.247	-1.311
	(1.330)	(1.073)	(1.206)
Market to book	0.000	-0.002	-0.059**
	(0.004)	(0.004)	(0.025)
Board size	1.348***	0.840***	0.144
	(0.321)	(0.306)	(0.425)
Non-executives %	0.025***	-0.019***	-0.012
	(0.005)	(0.006)	(0.008)
Ln (Sales £'000)	-0.361***	-0.034	-0.217**
	(0.058)	(0.060)	(0.085)
Ln (Free Cash Flow)	0.524***	-0.705***	-0.136
	(0.203)	(0.219)	(0.361)
Ln (Tenure)	0.218***	0.273***	0.254*
	(0.0683)	(0.079)	(0.132)
Ln (Firm Age)	-0.318***	0.148**	-0.382***
	(0.064)	(0.074)	(0.121)
Constant	-4.990***	3.195**	3.261
	(1.446)	(1.434)	(2.272)
Industry effects	Yes		
Consultant effects	Yes		
Observations	1931		
Log likelihood	-1827		
Pseudo R-squared	0.23		

Table A.5.4: Robustness test 4

Multinomial logit model estimating the probability of performance measures in compensation contracts (using total assets as a proxy for firm size)

Multinomial logistic regression of performance measures in compensation contracts against TSR volatility, EPS volatility, board size, market to book, firm sales, % of non-executive directors, free cash flow, CEO tenure and firm age. All results are relative to the base category of (EPS and TSR jointly). Robust standard errors are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	**TSR**	**EPS**	**Neither earnings nor TSR**
	Column 1	**Column 2**	**Column 3**
	Multinomial logit model results	Multinomial logit model results	Multinomial logit model results
EPS vol	0.131***	-0.137**	0.070
	(0.023)	(0.062)	(0.038)
TSR vol	-3.521***	-1.994	-1.610
	(1.264)	(1.256)	(1.547)
Market to book	0.000	-0.005	-0.063**
	(0.004)	(0.005)	(0.025)
Board size	0.655**	1.561***	0.357
	(0.325)	(0.334)	(0.443)
Non-executives %	0.013**	-0.010*	-0.010
	(0.005)	(0.005)	(0.007)
Ln (Assets)	-0.322***	-0.052	-0.253**
	(0.069)	(0.062)	(0.099)
Ln (Free Cash Flow)	0.119	-0.287	-0.194
	(0.170)	(0.263)	(0.438)
Ln (Tenure)	0.241***	0.224***	0.273**
	(0.065)	(0.072)	(0.126)
Ln (Firm Age)	-0.321***	0.174**	-0.386***
	(0.063)	(0.075)	(0.120)
Constant	-4.969***	3.650**	2.947
	(1.395)	(1.496)	(2.229)
Industry effects	Yes		
Consultant effects	Yes		
Observations	1931		
Log likelihood	-1845		
Pseudo R-squared	0.23		

Table A.5.5: Robustness test 5

Multinomial logit model estimating the probability of performance measures in compensation contracts (inclusion of EPS along with income measures in earnings category)

Multinomial logistic regression of performance measures in compensation contracts against TSR volatility, EPS volatility, board size, market to book, firm sales, % of non-executive directors, free cash flow, CEO tenure and firm age. All results are relative to the base category of (EPS and TSR jointly). Robust standard errors are reported in parentheses. ***, **, * denote significance at 1%, 5%, and 10%, respectively.

Variable	**TSR**	**EPS**	**Neither earnings nor TSR**
	Column 1	**Column 2**	**Column 3**
	Multinomial logit model results	Multinomial logit model results	Multinomial logit model results
Earnings vol	0.129***	-0.109**	0.048
	(0.023)	(0.055)	(0.035)
TSR vol	-3.858***	-2.070	-1.672
	(1.133)	(1.130)	(1.447)
Market to book	0.000	-0.001	-0.045**
	(0.004)	(0.004)	(0.021)
Board size	1.266***	0.730**	0.014
	(0.321)	(0.305)	(0.410)
Non-executives %	0.025***	-0.021***	-0.009
	(0.005)	(0.005)	(0.008)
Ln (Sales)	-0.361***	-0.018	-0.168**
	(0.058)	(0.060)	(0.080)
Ln (Free Cash Flow)	0.551***	-0.721***	-0.083
	(0.204)	(0.222)	(0.319)
Ln (Tenure)	0.204***	0.222***	0.231*
	(0.066)	(0.075)	(0.123)
Ln (Firm Age)	-0.336***	0.102	-0.439***
	(0.061)	(0.073)	(0.117)
Constant	-4.969***	3.650**	2.947
	(1.395)	(1.496)	(2.229)
Industry effects	Yes		
Consultant effects	Yes		
Observations	1964		
Log likelihood	-1885		
Pseudo R-squared	0.23		

6 RPE CHOICES IN COMPENSATION CONTRACTS OF UK FIRMS

6.1 Introduction

Equity-based compensation has become an increasingly significant element of executive compensation for UK CEOs. Historically, firms granted time-based options and restricted stock shares, however, as discussed in Section 2.1.2, in 1995 the Greenbury report recommended that incentive compensation should be linked to relative performance in order to trigger or accelerate the vesting of equity. Agency theory views performance-related pay as a key mechanism that fosters incentive alignment between the interests of shareholders and executives, and hence, it is crucial for firms to set an appropriate level of compensation, and alongside, set challenging but achievable performance targets (Stedry and Kay, 1966). Usually, the board remuneration committee determines the design of executive compensation contracts on behalf of shareholders, but, the terms by which remuneration committees determine the design of relative performance plans have not been well understood and explored.

Executives' equity-based compensation is the most variable component of their compensation package. Many reforms and policies have stressed the importance of transparency and toughness in the performance criteria of equity compensation. Corporate performance, which is often a key determinant of CEO pay in such packages, can be measured in relative or absolute terms. Relative performance evaluation (RPE) is the use of peers' performance in evaluating the company's performance. Holmstrom (1982) argues that firms should exclude components of performance measures that are driven by exogenous shocks, indicating that RPE ought to exclude the effects of common shocks when determining executive compensation.

In the context of executive compensation, it has become common practice for firms to examine the pay packages offered by peers in order to determine the appropriate pay for their executives,

termed “compensation benchmarking”, to providing competitive pay packages relative to peer firms of similar industry or market capitalization. Interestingly, there is full disclosure of peers used for “compensation benchmarking” in the US, while such details are rarely seen in UK annual reports. Similar to the process of compensation benchmarking, remuneration committees also use peer groups to compare the firm’s relative performance. There exist greater disclosure and transparency in peers selected for “relative performance evaluation” purposes in the UK compared to the US.

There are two different ways of studying RPE usage. In the explicit method, researchers use regulatory filings to observe whether firms use RPE. In the UK, since 2002, the Directors’ Remuneration Report (DRR, 2002) requires firms to be transparent in producing information related to executive compensation contracts, and subsequently, there has been an increase in disclosure of explicit methods.43 Currently, UK companies disclose detailed information related to components and level of pay in their annual reports.

In the implicit method, the more common approach to test the RPE hypothesis is to regress executive pay on average industry or market performance (e.g. Gibbons and Murphy, 1990; Janakiraman et al., 1992; Aggarwal and Samwick, 1999b; Albuquerque, 2009). However, due to limited data availability on peer groups, researchers do not identify the actual peer groups, making it difficult to test accurately whether or not the use of RPE is present in compensation contracts. Since 2006, the Securities and Exchange Commission (SEC) requires US-listed firms to disclose RPE utilisation, benchmarks and peers in their proxy statements. Only very recently,

[43] The Directors' Remuneration Report Regulations (2002). http://www.opsi.gov.uk/si/si2002/20021986.html [accessed on September 19, 2016].

studies make use of new disclosure rules and investigate implicit RPE tests while incorporating explicit RPE details for US firms (e.g. Gong et al., 2011; Black et al., 2016; Bizjak et al., 2017)

Over, the last few years there has been a change in a way in which executives are awarded equity compensation, with an introduction of a mix of RPE and absolute growth measures in long-term incentive plans. In addition, greater disclosure and scrutiny in executive pay have led firms to select innovative compensation designs, thereby making compensation structure more complex for shareholders and the general public to evaluate and understand.

The advantage of studying the determinants of RPE use in the UK is that the enhanced disclosure and transparency present in the reporting provides us with a superior opportunity to examine the process of performance benchmarking. In addition, the majority of firms in the UK employ performance vested long-term incentives in their compensation contracts. There exist considerable variation in the choice of the peer groups, minimum and maximum performance targets, and the corresponding percentages of equity vesting at these threshold targets (Ferri, 2009). The descriptive statistics of Zakaria's (2012) study reveals that it is uncommon for UK firms to employ RPE based measures in short-term bonuses, as opposed to long-term incentive plans. Therefore, the focus of this study will be on long-term incentive plans.

This chapter is devoted to providing detailed evidence on the explicit usage and characteristics of RPE in long-term incentive plans awarded by firms in the FTSE 350. We examine the relationship between common risk and the explicit use of RPE. Results reveal that common risk is associated with the decision by firms to use RPE in compensation contracts after controlling for corporate governance characteristics. This factor also influences the specific plan characteristics including the use of peer group choice and percentage of equity vesting at initial or upper quartile performance set by the firms. We also find that 42%, 42% and 16% of total

plans pick custom, index, and sector peer group as categories, respectively, in their long-term incentive plans.

This chapter makes several contributions to the limited literature on the explicit use of RPE for UK firms. Firstly, this study uses a large comprehensive dataset covering the years 2010 to 2014, while the only existing study in the literature which examines performance characteristics of RPE plans for UK firms was carried out by Carter et al. (2009), although, for only 2002. In investigating the explicit use of RPE, we consider all the performance standards (i.e. absolute only, relative only, and absolute and relative jointly) used in compensation contracts. Further, we employ different measures of common risk which are calculated using the benchmark returns from market, industry and supersector. Secondly, to the best of our knowledge, we are the first to provide an in-depth breakdown of peers and performance target characteristics in RPE plans and their determinants, though there exists limited literature on target setting especially in the context of US firms (Kole, 1997; Indjejikian and Nanda, 2002; Leone and Rock, 2002). Lastly, in our descriptive analysis, we examine the extent to which the nature of the peer group (i.e. self-selected firms, sector peers, or a broader index peers) and other long-term incentive characteristics affects the equity vesting in actuality at different ranges.

The rest of this chapter is structured as follows: Section 6.2 covers the literature review and hypothesis development, Section 6.3 discusses the variables, and Section 6.4 focuses on the detailed design of RPE-based contracts and vesting percentages by industry. In Section 6.5, we discuss the empirical tools we use to examine firms' decisions to use RPE-based contracts while Section 6.6 focuses on empirical results. Finally, Section 6.7 concludes.

6.1.1 Discussion on the use of Relative Performance Evaluation (RPE) presence

Agency costs emerge when principals (shareholders) hire agents (directors) to act in their interests since the two parties have divergent interests and information asymmetry prevents shareholders from monitoring CEO actions directly. Nevertheless, the agency problem can be mitigated by tying executive compensation to firm performance (Jensen and Meckling 1976; Holmstrom, 1982; Diamond and Verrecchia 1982). In order to evaluate managerial actions, firms can choose either absolute or relative performance measures. During the target setting process, absolute targets are set at the start of the period and are based on analysts' forecast and past performance (Murphy, 2000), whereas the relative performance approach selects peers at the start of the process but uses ex-post peer group performance to assess actual managerial performance.

As discussed in Section 3.3.1, the initial literature on executive compensation mainly explores the relationship between pay and performance, seeking to answer the question of whether higher pay is justified by higher performance; subsequently, the literature has shifted to focus on the choice of metric used to evaluate corporate performance contracts (e.g. Lambert and Larcker, 1987; Ittner et al., 1997 and Core et al., 2003). For example, Lambert and Larcker (1987), who study the selection of performance metrics between market versus accounting measures in salary plus bonus contracts. However, only very recently have researchers started to focus on detailed contractual terms and analyze ways in which firms set performance measures and the extent to which such practices support the predictions of optimal contracting theories. Among this latter group, key studies include De Angelis and Grinstein (2015), who examine a selection of contractual choices and firm characteristics in bonus and equity plans of US firms. Their study shows that performance choices are related to a metric's relative informativeness, as

suggested by the Informativeness Principle (Holmstrom, 1982), which states that firms should rely more heavily on a measure that is highly sensitive to a CEO's actions.

Economic theory states that if exogenous shocks affect the performance of multiple agents', it will be beneficial for firms to employ relative performance instead of absolute performance when there exists greater common uncertainty (e.g. Holmstrom (1979, 1982)). The presence of RPE filters out common shocks, which leads to risk-sharing benefits between shareholders and managers and provides shareholders with a more informative measure while assessing managerial actions and "de-noising" CEO effort (Holmstorm, 1982; Holmstrom and Milgrom, 1987). Consequently, firms that benchmark against their peers can insulate non-firm-specific risks common to the firm's peers and hence make equity compensation more efficient.

As discussed in Section 3.3.3, while testing implicit RPE use, researchers regress executive pay against the firm's and the market's performance. A positive coefficient on firm performance is taken to show a positive correlation between firm performance and the level of executive pay, while a negative coefficient on market performance indicates a filtering out of the market risk component of firm performance. As Antle and Smith (1986) note, higher peer performance, as measured by accounting and market measures, decreases the level of compensation.

Only a limited number of studies have tested explicit RPE use in incentive contracts (Murphy, 2000; Bannister and Newman, 2003; Carter et al., 2009; Gong et al., 2011; Black et al., 2016; Bizjak et al., 2017). Murphy (2000) investigates a sample of 177 U.S. firms in the 1997 Towers Perrin survey and finds that 28.8% of firms use RPE in incentive plans. Their research also argues that prior studies which identify RPE presence by employing an implicit approach are more likely to have used a misspecified model, by assuming similar peer groups (industry/market) in RPE firms. Before the advent of mandatory SEC disclosure of peer groups in 2006, prior studies on the US were obliged to employ implicit techniques to detect RPE, with

mixed results. Gibbons and Murphy (1990), Janakiraman et al. (1992) and Rajgopal et al. (2006) document support for the use of RPE using implicit methods.

As reviewed in Section 3.3.3, much of the existing literature focuses on US firms, making explicit use of mandatory SEC disclosure and testing for evidence of implicit RPE use in compensation contracts by regressing pay against performance. Concerning the literature on determinants of RPE use in compensation contracts, there exist two principal studies, namely, Carter et al. (2009) and Gong et al. (2011). The Carter et al. (2009) study is restricted to a sample of 180 UK plans for a single year, 2002, for FTSE 350 firms, while Gong et al. (2011) study the S&P 1500 companies, again for only one year, 2006; they find that firms select peers in a manner that captures common risk, consistent with agency theory. These studies' categorization of companies however lacks subtlety, in that they neglect to identify those firms which use absolute rather than relative measures: Carter et al. (2009) classify firms into "RPE only", "Some RPE" and "No RPE", while Gong et al. (2011) classify firms into "RPE only" and "Non-RPE", omitting those firms that use some RPE or absolute measures. In the present study, we seek to advance over both of these, by classifying firms into "RPE only", "absolute only" and "absolute and RPE". In addition, the characteristics of relative performance incentives have not yet been thoroughly explored in the current literature.

The Carter et al. (2009) study failed to find evidence that economic determinants are associated with the decision to use RPE in the long-term incentive plans of UK firms (e.g. common risk) and only uses a single proxy to capture common risk. By contrast, our study extends the literature by taking into account several proxies of common risk. Further, we also consider the marginal effects of various performance categories, implying a unit change in an independent variable on the probability of selecting performance standards. We also control for industry and

the identity of the compensation consultant, neither of which are captured by Carter et al. (2009).

To the best of our knowledge, the dataset used in this study employed in analyzing the explicit use of RPE is the most detailed in the context of investigating long-term incentive contracts for UK firms. We also extend the literature by including corporate governance variables such as independent directors and board size. Since 2002, the structure of UK remuneration contracts has changed and performance contingencies are increasingly more varied and complex (Ferri, 2009). Thus, it is useful to test RPE in the current UK settings. As noted above, the prior literature on RPE has only considered RPE and non-RPE (absolute) categories exclusively, but this study, additionally, considers companies which employ absolute and relative measures jointly. We consider this to be an important methodological advance since this latter category accounts for over 50% of the firms in our sample.

RPE firms incentivize executives to perform better while insulating their compensation from common shocks that likewise influence the performance of similar firms, the market or the industry. Consequently, RPE improves the alignment between pay and performance. Agency theory guides our empirical design as it suggests that the efficiency of a compensation contract can be improved by employing the performance of agents exposed to similar risks.

6.1.2 On Peer Groups used in RPE

Albuquerque et al. (2013) and Faulkender and Jun Yang (2010) employ an explicit approach to analyze compensation benchmarking peers of US firms. The disclosing firm compares the CEO compensation of their peers on the level of their own CEOs and further investigates the characteristics between potential and actual peer. Their findings suggest that industry and size

are two important components that explain peer group selection. Moreover, the level of peers' compensation is another important factor in determining the selection of peers. Faulkender and Jun Yang (2010) demonstrate that firms are more likely to pick peers which compensate their executives with a higher level of remuneration, providing evidence of self-serving bias in compensation benchmarking.

Lazear and Rosen (1981) conduct a pioneering study on an RPE style of tournament theory, where the main aim is to create a tournament to incentivize managers to outperform their peers, eventually leading to higher relative performance for greater reward. Within these models, pay rises with greater relative performance instead of absolute performance. In plans with RPE conditions, executives are continuously evaluated based on their performance relative to their peers. Thus, the selection of peers is a vital part of the incentive system in addressing agency problems. On the other hand, rent extraction theory advocates that firms will select peers in their RPE based plans in such a way as to maximize relative performance and award higher pay to executives (Gibbons and Murphy, 1990).

As discussed earlier, much of the existing literature investigates peer selection for compensation benchmarking. Contrary to compensation benchmarking, the primary aim of performance benchmarking is to remove common risk. From firm selection bias or rent extraction point of view, the effect of peer performance is the opposite for RPE peers relative to pay benchmarking peers, since better-performing companies award higher levels of compensation, and accordingly will be chosen as benchmarking peers. However, underperforming companies are more likely to be selected as RPE peers to improve relative performance for the purposes of maximizing compensation (Bizjak et al., 2008). Another example of rent extraction in performance benchmarking is to pick a set of peers which do not face similar external shocks neither do they share common ability to respond to those shocks with respect to that of RPE

firm (Albuquerque, 2009). This makes such contracts less efficient. The selection of peers in compensation benchmarking serves a different purpose for the selection of peers used for performance benchmarking purposes, hence the finding from compensation benchmarking does not necessarily apply to RPE peers.

In a working paper, Bizjak et al. (2017) test the explicit use of RPE in US firms. Similar to prior studies on compensation benchmarking, they investigate determinants of peer firm selection in relative performance evaluation plans. Their results conclude that firms select peers to filter out common shocks, which is in line with the economic motivation behind RPE use. These findings also show evidence of bias in peer selection and benchmarking which results in higher levels of executive compensation, as selected firms tend to have lower market betas and lower estimates of future stock returns.

Turning towards other RPE characteristics, Hvide (2002) concludes that tournament style RPE can have a significant impact on the selection of performance conditions. In this regard, theoretical work by Brisley (2006) indicates that for a stretching performance target (i.e. payout range) vesting of options as an increasing function of share price can improve risk-taking incentives more than vesting at a single point; while Brennan (2001) contends that the use of performance hurdles in options are unlikely to be considered as optimal. Lazear and Rosen (1981) discuss target spread (the difference between median and maximum performance required for equity vesting of executives), which is one of the characteristics in evaluating RPE and argue that magnitude of the spread across different levels of pay at several percentile rankings can be used to manage CEO effort. Only limited studies have investigated characteristics of RPE directly. In this present study, however, we focus on analysing the impact of common risk on the target spread, selection of peer group, and vesting payout at initial and maximum thresholds in long-term incentive plans.

6.1.3 RPE Award Design

In RPE-based plans, the most common award is a rank-order tournament, where the level of equity payout is conditioned on the percentile ranking at the end of a pre-specified performance period, which can be measured against total shareholder returns or EPS relative to a peer group. Firms select defined peer groups to evaluate agent's performance and the proportion of initial shares' vesting depends on the firm's relative rank at the upper and lower bounds and between these two bonds. The payout is usually a straight line between the upper and lower bounds of the performance target. The lower bound, required for minimum vesting, is conventionally set at median performance (i.e. the 50th percentile ranking), whereas the upper bound, beyond which no additional benefits are awarded, is most commonly set when relative performance is at the upper quartile (i.e. the 75th percentile ranking). The maximum threshold is defined as the maximum performance beyond which no additional incremental incentives are awarded.

Firms occasionally select a stepped payout, where payout increases in a series of steps. In the target setting process, firms that employ outperformance plans determine the payout level based on magnitude by which the company outperforms its peer group. To give an example, in 2010, Petrofac, used TSR outperformance relative to self-selected peers a performance target in their long-term incentive plan. The firm needs to have an initial threshold of TSR equal to the index, in order for 30% of the equity to vest. The maximum payout was set to a TSR outperformance above the index by 25% over three years. If TSR was below the index, no equity will vest.

6.2 Related Literature and Hypothesis development

Based on the above discussions, we formulate the following research hypothesis:

Hypothesis 6.1: The higher the common risk faced by the firm, the greater the likelihood of choosing RPE based measures.

6.3 Research Variables

6.3.1 Use of RPE in remuneration contracts

In this section, by using the explicit approach, we examine factors that may affect firms' decision to employ RPE in remuneration contracts. We also control for the operation of multiple plans in their compensation contracts.

Common Risk

Agency theory predicts that the risk-sharing benefits of RPE increase when common risk affects both peer and firm performance as it filters out common risk (e.g. Holmstrom 1982). Consistent with theory, we expect to find a positive association between RPE implementation and common risk between a firm and its peers. Similar to the approach of Gao et al. (2017) and Gong et al. (2011) and, also, due to the greater prevalence of total shareholder return as an RPE measure, we use total shareholder return to compute proxies for common risk.

We measure common risk by regressing each firm's stock return (r_i) on market returns (r_m), FTSE 350 Index). We apply a similar procedure with industry and supersector return based on the FTSE ICB industry or supersector, to explore the possibility that the firm's return experiences similar shocks to those of its peers in the same industry or supersector, implying

greater use of RPE. Previous research has also tested the use of industry peer groups in RPE (e.g. Jensen and Murphy, 1990 and Janakiraman et al., 2012).

$$r_i = \beta_0 + \beta_1 rm + \varepsilon_i \quad (6.1)$$

In our robustness tests, we also employ other different proxies to measure common risk as used in previous literature i.e. Gao et al. (2017) which uses data for US companies. Thus, we employ R squared from the regression of firm-level returns on the value of weighted index returns over the prior 48 months. Finally, in our robustness tests, we also use correlation as a proxy for common risk.

Industry Concentration

Aggarwal and Samwick (1999b) argue that firms operating in competitive industries are less inclined to use relative performance-based incentives as it may encourage destructive competition, thus, influencing the shareholders' value. Their empirical results show that as the competition increases, the sensitivity of pay to rival firms also increase, suggesting that the lower the industry concentration (i.e. the more competitive) the less likely it is to use RPE-based plans. Following Gong et al. (2011), we use industry concentration, measured as Herfindahl Index of sales within each FTSE ICB industry, as a proxy for the industry concentration.

Compensation Consultant

With greater complexity in contract designs, the role of the remuneration consultant becomes crucial in determining the level and structure of executive compensation. Therefore, firms seek independent advice from an expert on best market practices. In the UK, the majority of FTSE 350 companies hire at least one compensation consultant due to their expertise in matters related to executive compensation (Kabir and Minhat, 2014). Consultants are also hired to devise

contracts with RPE condition as shown by Murphy and Sandino (2009). It was revealed further in the descriptive statistics conducted by Kuang et al. (2014) that a consultancy firm- HNBS, advised their clients on RPE based contracts in stocks and options more than their competitors.

Board Size

Board size is measured as the total number of non-executives and executives on the board. Prior studies state that large boards are formed of a higher number of individuals that bring greater expertise and knowledge to the board. However, it has also been argued that the size of board impacts its ability to control and monitor activities, thereby, making them less effective due to the lack of coordination and communication. Thus, large boards are not always an assurance of good corporate governance quality. Previously, board size has been studied to analyse its effects on executive compensation, as discussed in Section 4.3. These studies have found that board size plays a monitoring role in determining the different forms of executive pay (e.g., Mehran, 1995; Core et al. 1999). This suggests that board size could also potentially play a role in determining decisions related to executive pay, such as the use of RPE or selection of firms' performance target.

Independent Directors

Board independence is usually defined as the proportion of outside directors on a board. They are members of the board but do not play a direct role in the everyday operation of the business as part of the executive team. A greater percentage of independent directors on board is considered a sign of good internal corporate governance as they represent shareholders' interests.

In the current study, we seek to explain the influence of board independence on the selection of RPE. Previous studies, Gong et al. (2011) and Gao et al. (2017) both find a positive association

between a greater percentage of non-executive directors and RPE selection in US firms. These findings lead us to expect that the use of RPE is associated with good internal corporate governance.

Institutional Investors

In 2002, the Directors' Remuneration Report (DRRR) introduced mandatory non-binding annual shareholders vote on executive pay at each firm's Annual General Meeting, also referred to as say-on-pay (SOP) in the UK (Conyon and Sadler, 2002). This provides the shareholders with an opportunity to have a voice on matters related to executive compensation. In recent years, the role of institutional investors has become crucial in monitoring executive pay as they desire to set relevant targets which are also more difficult to achieve by executives. Institutional owners influence accountability due to their investments in the business. Moreover, in the annual general meeting (AGM), there exists a vote in favour of or against CEO pay rise, or on performance measures managerial actions through a high level of ownership. They are considered as effective monitors and mitigators of agency problems. According to the Institute of British Insurers (2002), institutional investors argue that better corporate governance should influence firms' selection of RPE-based plans in compensation contracts. Thus, we expect the selection of RPE based contracts to occur in better-governed firms. Hence, in this present study, we use the sum of top 4 institutional ownership who own more than 5% of company shares as a proxy for the quality of corporate governance. Other measures of corporate governance quality used in this study are board size and percentage of independent directors.

Sales

There is limited evidence on the association between RPE and firm size. Himmelberg and Hubbard (2000) empirical testing for CEO talent with firm size and argue that firms are less

likely to filter market and industry fluctuations while awarding talented CEOs. Additionally, the organisational complexity of large corporations makes it difficult to find appropriate peers. Thus, we do not expect large firms to opt for RPE as a performance standard in executive compensation contracts.

Firm Performance

The introduction of RPE in compensation contracts can be used as a justification to award higher level of executive pay by companies which already perform relatively better than their peers. Alternately, Rajgopal et al. (2006) suggest industry-adjusted market performance as a proxy for CEO talent and observe that better performing firms display less evidence of RPE use. Following the previous literature on RPE, for example, Gong et al. (2011), we also include industry-adjusted stock performance in our empirical model.

Dividend Yield

Carter et al. (2009) find no effect of dividend yield on the use of RPE in compensation contracts. However, the authors find that firms which pay higher dividends opt for easy performance targets by employing performance hurdles and lower payout target spread while evaluating their executives.

Market to Book

Murphy (2000) finds that firms with higher level of growth opportunities are more inclined to employ external standards (RPE) than internal standards, such as earnings, which tend to incentivize managers of higher growth firms to smooth out fluctuations (Leone and Rock, 2002). This study employs market to book ratio as a proxy of growth opportunity.

6.4 Executive Compensation Contracts

Table 6.1: Breakdown of type of performance standards in remuneration contracts

Performance Measurement	No. of firm-year observations	Percentage
Absolute (Non-RPE)	263	24.5%
Relative Exclusively	189	17.6%
Relative & Absolute Jointly	620	57.8%
Total	1,072	100

The sample consists of constituents of the FTSE 350 UK index from 2007 to 2014. Table 6.1 demonstrates that 24.5% of firms in the sample use non-RPE measures, while 17.6% of firms implement RPE based plans exclusively and another 58% employ a mixture of RPE and non-RPE measures. Overall, the sample consists of 1072 firm-year observations. In their study of firms in 2004, Carter et al. (2009) find that on an average, 17% of UK firms use a mixture of absolute and relative measures compared to 58% in the present sample. This provides further evidence that with time, performance standards have undergone a change in compensation contracts in the context of UK firms.

Table 6.2: Industrial breakdown of performance standards in long-term incentive plans

	Absolute measure only	Relative measure only	Absolute and Relative measures jointly	Total
Basic Resources	12(17%)	33(46%)	27(37%)	72(7%)
Consumer Goods	37(34%)	29(28%)	41(38%)	107(10%)
Consumer Services	75(32%)	36(15%)	124(52%)	235(21%)
Financials	34(24%)	19(13%)	87(62%)	140(13%)
Healthcare	11(22%)	4(8%)	35(70%)	50(5%)
Industrials	65(22%)	17(6%)	209(72%)	291(27%)
Oil and Gas	4(7%)	25(43%)	30(50%)	59(6%)
Technology	17(35%)	7(14%)	25(51%)	49(5%)
Telecommunications	6(18%)	6(19%)	20(62%)	32(3%)
Utilities	2(6%)	13(35%)	22(59%)	37(4%)
Total	263	189	620	1072

Table 6.2 represents performance standards by industry in long-term incentive arrangements. Oil and Gas firms frequently select relative measures; this could be because fluctuations in oil prices can be filtered using industry comparators. Similarly, companies in the Basic Resources industry frequently adopt plans with relative measures. However, the dominance of absolute measures in the Technology industry could be explained by R&D expenditures and innovation growth targets. These descriptive statistics indicate that industry-specific effects should be employed in our empirical design as the selection of RPE is more prevalent in certain industries. Gong et al. (2011) find that 25% of US firms disclosed RPE use in 2006, compared to over 74% in the current sample, indicating that a greater number of UK companies incorporate RPE standards in their incentive arrangements, as shown in Table 6.1.

Table 6.3: Breakdown of relative performance evaluation (RPE) and non-RPE in long-term incentive plans of FTSE 350 UK firms

Panel A: Breakdown of RPE plans in long-term incentive in remuneration contracts

	No. of firm-year observations
Performance payout range	802
Performance payout range and hurdle	7
Total	809

Performance Measures	No. of firm-year observations
Total Shareholder Returns	769
Earnings per share	25
Return on Investment	15
Total	809

Panel B: Breakdown for non-RPE firms based on long-term incentives in remuneration contracts

	No. of firm-year observations
Performance payout range	806
Hurdle/underpin and performance payout range	77
Total	883

Performance Measures	No. of firm-year observations
Earnings per share (EPS) only	615
EPS and ROIC	42
Net Asset Value	19
Earnings Measure (EBIT, Net Profit or Return on Common Equity only)	77
EPS and others	115
Total Shareholder Return	15
Total	883

Table 6.3 presents a breakdown of performance measures and the use of a payout range or hurdle in RPE and non-RPE based measures. Carter et al. (2009) descriptive statistics show that a majority of firms select a hurdle over a payout range. In comparison, our descriptive statistics

suggest that recently it has become a less common practice to adopt a single performance hurdle in RPE based plans, as most of these plans select a payout range. In plans with non-RPE conditions, we observe that some firms employ a single performance hurdle or “underpin” terminology. Generally, an underpin measure is used in conjunction with another performance measure and the firm needs to achieve both performance metrics in order for executives to vest their equity, as shown in Table 6.3.

Table 6.4: Industry breakdown of comparator groups which incorporate RPE conditions

Index	FTSE 51-130	FTSE Small Cap	FTSE All Share	FTSE 250	FTSE 350	FTSE 100	Sector	Sector + Index	Bespoke	Total
Basic Resources	7	-	4	21	2	7	22	6	40	109
Consumer Goods	7	-	7	23	9	5	5	5	73	134
Consumer Services	-	8	-	44	23	25	20	49	83	252
Financials	-	-	-	7	3	10	3	47	88	158
Industrials	20	22	7	117	5	27	4	42	131	375
Oil and Gas	-	-	-	4	-	7	-	1	60	72
Technology	-	-	-	15	12	2	-	10	7	46
Telecommunications	3	-	-	-	5	-	-	-	20	28
Utilities	9	-	-	7	-	24	4	-	20	64
Healthcare	-	13	-	10	-	6	3	-	21	53
	46(4.6%)	43(3.3%)	18(1.3%)	248(19.2%)	59(4.6%)	113(8.7%)	61(4.7%)	160(12.4%)	543(42.1%)	1291

Table 6.4 summarises the comparator groups used by firms in long-term incentive plans to benchmark-relative performance. Some firms in our sample use more than one long-term incentive plan, resulting in 1291 long-term incentive plans in 809 firm-year observations. More than 70% of Oil and Gas and Telecommunication firms pick bespoke/self-selected peers to measure relative performance, while Industrial firms predominantly pick FTSE 250 UK firms as a relative benchmark. In the Financials sector, 47 out of the 150 RPE plans aspire to compare with sector plus index category in financials' industry. One likely interpretation for this is that the fluctuations in Real Estate and Financial industries can be best filtered out using the analogous index and industry performance. Overall, 42% of plans incorporate self-selected peers (bespoke) in relative performance contingencies.

Table 6.5: Breakdown of sector and index peer groups in RPE plans

Sector			
FTSE Pharma and Biotech	4	FTSE Travel and Leisure	21
FTSE Oil and Gas	5	FTSE Mining and Oil	12
FTSE REIT	10	FTSE Beverages	7
FTSE Electricity	6		
Sector plus Index			
FTSE All Share Tech Index	3	FTSE World Media Index	10
FTSE All Share Media Index	17	FTSE 350 Support Services	15
FTSE 350 Real Estate Index	47	FTSE World Technology Index	10
FTSE 350 Industrials	15	FTSE 350 Mining Companies	5
FTSE 350 General Retailers	18	FTSE 350 Travel and Leisure	2
FTSE Global Telecom	5	FTSE 100 Tech-mark Index	7
FTSE Global Mining Index	10	Dow Jones U.S. Oil Equipment Index and STOXX Europe Oil Equipment and Services sector index.	5
Index			
FTSE 100	88	FTSE 100 excl. financial firms	25
FTSE 51-150	33	FTSE 51-150 (excl. investment trusts)	13
FTSE Small Cap	16	FTSE Small Cap (excl. investment trusts)	27
FTSE All Share	18	FTSE 250 (excl. financial, insurance and investment trusts)	5
FTSE 250	118	FTSE 250 (excl. investment trusts)	107
FTSE 250 (excl. financial companies)	10	FTSE 250 (excl. financial and investment trusts)	8
FTSE 350	41	FTSE 350 (excl. investment trusts)	13
FTSE 350 (excl. financial companies)	5	FTSE Morgan Stanley/HSBC Index	10
FTSE Global Index	5		

The above table illustrates the breakdown of sector and index comparator groups used to benchmark relative performance and is a sub-category of sector and index peers used in Table 6.4. We note that some plans explicitly use a named index while others prefer to select constituents of the index (e.g. FTSE 51-150). However, 19.2% of firms in their plans compare their own performance relative to the FTSE 250 companies which is the most popular category to benchmark relative performance. This clearly shows that there is diversity in the selection of peers when evaluating the relative performance of the company. In contrast to Pass et al. (2000), the descriptive statistics of this study reveal that firms which employ a broader market index category (e.g. FTSE 100 or 250), often choose to exclude financial firms from their peer group.

An exclusion of certain comparator group from the index appears to be a recent practice within the pay-setting process. Further, 8.7% firms benchmark their performance against the FTSE 100 in determining the level of executive pay in their plans. A small proportion of these, 3.3%, benchmark their performance against the FTSE Small Cap Index. Lastly, firms in the Financial and Consumer Services industries (e.g. Media, Real Estate) evaluate performance relative to sector peers. This suggests that the firms in these industries filter out shocks using industry relative performance.

Table 6.6 below shows the breakdown by industry of the firms that employ outperformance plans and plans with upper quintile or decile performance for maximum award payout. We find that around 62% of plans in the Basic Resources industry and 58% of the financial firms adopted plans where the maximum payout is not triggered at the traditional 75th percentile ranking. This suggests that financial firms select tighter performance conditions than other industries. Additionally, 48% of firms in the Utility industry use plans with relative performance contingencies which set its maximum payout as different from the traditional upper quartile. We note that all RPE firms set their initial threshold target at the median performance which must, first, be attained if at all, any rewards are to vest. Finally, Columns Avg_ RPE_IV and Avg_RPE_UQV suggest that the average percentage of equity vesting at 50th percentile and upper quartile percentile ranking vary by industry and some industries set lower initial vesting target than others, such as financial or basic materials.

Table 6.6: Breakdown by industry of plans with non-traditional relative percentile ranking for maximum payout and percentage vesting at initial and upper quartile percentile rankings set by RPE firms.

Industry	No.	80th PR	90th PR	% OP over Median	% OP over Index	Total no. of plans	% of plans	Avg_RPE_IV	Avg_RPE_UQV
Basic Resources	109	6	10	12	40	68	62.4%	25.2%	95.0%
Consumer Goods	134	0	10	8	10	28	20.9%	25.9%	94.0%
Consumer Services	252	50	18	7	27	102	40.5%	25.9%	96.0%
Financials	158	31	0	11	49	91	57.6%	24.8%	95.6%
Industrials	375	18	9	43	18	88	23.5%	27.4%	97.8%
Oil and gas	72	7	8	20	0	35	48.6%	27.9%	91.5%
Technology	46	6	12	0	0	18	39.1%	30.0%	96.7%
Telecom	28	6	0	0	0	6	21.4%	31.6%	98.4%
Utilities	64	0	2	21	8	31	48.4%	25.7%	96.5%
Healthcare	53	8	0	3	0	11	20.8%	26.0%	96.0%
Total	1291	132(10.2%)	69(5.3%)	125(9.6%)	152(11.7%)	478			

Note: No. stands for the number of RPE-based plans. "80th PR" indicates the number of plans where the maximum payout is at the upper quintile performance levels (80th percentile ranking). "90th PR" indicates the number of plans where the maximum payout is at the upper decile performance levels (90th percentile ranking). "OP over Median" indicates the number of plans where the required firm performance should be above the median performance plus an additional percentage growth p.a. to receive the maximum payout. "OP over Index" indicates the number of plans where the required firm performance should be above the index plus an additional percentage growth p.a. to reward the maximum payout. "% of plans" indicates the total number of plans where the maximum payout is only awarded when maximum performance is different from the traditional upper quartile (75th percentile) in RPE based plans. "Avg_RPE_IV" indicates the average percentage of initial vesting after achieving median performance (i.e. the 50th percentile ranking) by industry. "Avg_RPE_UQV" indicates the average percentage of equity which vests once the firm achieves upper quartile percentile ranking in each specific industry.

6.5 Empirical Strategy

6.5.1 Data Coding

The hypothesis we test in our analysis is whether firms subject to greater common risk affect the likelihood of choice of performance type. Our dependent variable consists of three different categories. Each year firms face the choice of performance metrics in their long-term incentive plans. The strategic choice of firm *i* as $Y_i=j$, where *j* is equal to {0, 1, 2}. Accordingly, we test this using a multinomial logit model, in which the dependent variable, namely, the choice of performance standard consists of three different categories: we code (absolute and relative measures jointly) as category 0, absolute measures only as category 1 and relative measure exclusively as category 2. The values allocated to performance standards only indicate different choices, and the ordinal value has no meaning.

6.5.2 Empirical Model

Multinomial Logit Model

Let $P_{i,j}$ be the probability that the *i*th firm chooses performance standard *j* , given by

$$P_{i,j} = \Pr(R_{i,j} > R_{i,k}) \quad \text{for } k \neq j,\ j \in \{0,1,2\} \quad , \tag{6.2}$$

where $R_{i,j}$ is the maximum utility attainable for firm *i* if it chooses performance measure *j*. Then,

$R_{ij} = \beta'_j X_i, \varepsilon_{ij}$

where X_i is a vector of firm characteristics. βj is the vector of corresponding coefficients.

If the stochastic terms $\varepsilon_{i,j}$ are independent and identically distributed, and follow the Weibull distribution, then the probability of performance standard can be modelled by the multinomial logit model:

$$\Pr(Y_{I=}j) = \frac{e^{\beta' j X_i}}{\sum_{j=0}^{2} e^{\beta' j X_i}} \tag{6.3}$$

In this model, we use the firms that employ absolute and relative measures jointly as the base category and normalise the corresponding coefficient $\beta_0 = 0$. Hence, the probability of having absolute and relative performance measures across their long-term incentive plan is given by:

$$\Pr(Y_{i=}0) = \frac{1}{1+\sum_{j=1}^{2} e^{\beta' j X_i}} \tag{6.4}$$

Moreover, the probability of absolute measure only and relative measure only is given by:

$$\Pr(Y_{i=}j) = \frac{e^{\beta' j X_i}}{1+\sum_{j=1}^{2} e^{\beta' j X_i}} \text{ for } j = 1 \text{ and } 2 \tag{6.5}$$

The explanatory variables consist of common risk, industry concentration, and set of control variables. Following Gong et al. (2011) and Gao et al. (2017), we proxy for firm characteristics using market to book, dividend yield and sales. We also include board size, non-executive directors and institutional ownership as proxies for corporate governance characteristics.

The multinomial logit model can be seen as simultaneously estimating a binary logit model comparing among the dependent categories and reference category (Long, 1997). When estimating a multinomial logit model, we need to select a reference category to which the estimate coefficient will relate.

The results from the model will tell us whether the type of performance type is influenced by common risk where $\mathbf{X}_i$ is a vector of firm characteristics. Our model is therefore:

$$\text{Prob. of Performance Type}_{j,t} = \alpha + \beta_1 \text{ Common Risk}_{i,t-1} + \beta_2 \text{ Industry Concentration}_{i,t-1}$$
$$\beta_3 \text{ Sales}_{i,t1-1} + \beta_4 \text{ MTB}_{i,t-1} + \sum_{j=1}^{p} \gamma_j \text{Corporate Governance Variables}_{i,t-1}$$
$$+\text{n control variable}_{\text{i, t-1}} + \varepsilon_{\text{i, t}}$$

for firm i at time period t, where $\varepsilon i,t$ *is the error term* (6.6)

6.5.3 Data Sources, Sample Construction, and Variable Definition

6.5.3.1 Independent Variables

The sample consists of all constituents of the FTSE 350 UK index from 2010 to 2014. Total shareholder returns and industry-adjusted returns are derived from the Datastream Return Index. The corporate governance data which includes board size and number of independent directors is extracted from Datastream and Bloomberg, respectively. Data for institutional ownership has been gathered from Fame. Definitions for all the variables used are included in Appendix to Chapter 6.

6.5.3.2 Dependent Variables

Sample Construction

Data on executive compensation characteristics has been hand-collected from annual reports. Following Gong et al. (2011), if the firm states that one long-term incentive plan is evaluated based on firm performance relative to the peer group, and an additional long-term incentive plan is determined on an absolute measure, then we code this under the category of absolute and relative measure jointly. Similarly, if the firm employs relative measures across their long-term equity plans, the firm is identified as an RPE firm exclusively. We exclude plans that are

one-off (e.g. recruitment plans) or plans with no performance conditions attached. This study considers long-term incentive plans that were active and in use for the given period of study. This analysis is performed at the firm level.

Four variables are used to study plan-level characteristics of RPE. Peer Group Choice is an indicator variable that equals 0 if the plan uses a pre-defined index such as the FTSE 350 or 250 for its comparator group, and 1 if the plan selects custom peers as comparator group, and 2 if the plan includes sector peers as a comparator group. RPE_IV is the percentage of equity vesting set by the firms after achieving median percentile performance. RPE_UQV is the percentage of equity vesting target set by the firms after achieving upper quartile percentile ranking. Finally, "target spread" is the difference between the maximum and median percentile rankings relative to peers in order for vesting to occur.

6.5.4 Variable Classification

For common risk proxies, namely, beta, R-squared and correlation, we run separate multinomial logit regressions by estimating three models separately. These regressions are categorised in columns named ''Market'', ''Industry'' and ''Supersector'' and indicate that the common risk variables are calculated using benchmark returns from the FTSE 350, the appropriate industry or supersector index respectively. The common risk variables in Table 6.8 are labelled as "Common risk_industry", which is calculated using benchmark returns within each FTSE ICB Industry, "Common risk_market", which is calculated using benchmark returns from the FTSE 350 and "Common risk_ supersector", which is calculated using benchmark returns within each FTSE ICB Supersector.

6.5.5 Descriptive Statistics

Following Tables 6.7 and 6.8, provide a descriptive statistic of the main variables and correlation matrix of independent variables used in the regression model.

Table 6.7 shows that the maximum value and standard deviation of beta_industry and beta_super sector are greater than beta_market; this implies that industry and supersector market returns are more volatile than the market. Average institutional ownership is 25% with a maximum value of 74%. The main objective for long-term incentive plans is to achieve long-term goals for the company (Mallin, 2007). However, surprisingly, in the US, greater numbers of firms still grant time-contingent shares. The UK adopted long-term incentive schemes before the US and share vests after three years, once the plan has been devised. Over time, the level of detail and complexity in the design of long-term incentive pay has increased considerably. Consistent with Ozkan (2007). The minimum value of board size is 5, with a mean of 9.3. Finally, the average value of the percentage of independent directors is 58%.

Table 6.7: Descriptive statistics for the independent variables. (Variables are defined in the Table A. 6.1 in the Appendix to Chapter 6)

Variables	Mean	Std. Dev	Min	Max
R-square_Market	0.29	0.18	0.00	0.78
Beta_Market	0.86	0.46	0.02	2.78
Corr_Market	0.49	0.19	0.00	0.93
R-square_Industry	0.33	0.25	0.00	0.97
Beta_Industry	0.87	0.48	0.01	3.33
Corr_Industry	0.52	0.47	0.00	0.96
R-square_Supersector	0.33	0.22	0.00	0.96
Beta_Supersector	0.88	0.49	0.01	3.14
Corr_Supersector	0.59	0.48	0.00	0.94
Ind_Con	0.19	0.18	0.04	1.00
Multiple plans	0.35	0.47	0.00	1.00
Ln_Sales	14.21	1.75	5.0	19.7
Board_Size	9.28	2.26	5.00	17.00
% of Ind_Directors	0.58	0.11	0.25	0.79
MTB	2.81	7.60	0.10	25.00
Instit_Own	0.30	0.11	0.10	0.74
Adj_Ret	0.30	0.66	-0.89	1.63
Div_Yld	3.20	2.18	0.00	11.46

Before proceeding to the regression analysis stage, Table 6.8 presents correlation matrix for all independent variables. Common risk is positively correlated with the dividend yield, indicating that firms having more volatile returns than the market, industry and super sector are more likely to pay higher dividends. In addition, firms subject to greater common risk have lower growth opportunities. Wooldridge (2010) and Gujarati (2004) suggest that multicollinearity might threaten the coherence of the regression analyses if correlation exceeds 80%. In this study, none of the correlation magnitudes of independent variables is greater 30%, and thus, we infer that multicollinearity should not be an issue. Correlations between common risk_mrk, common risk_ind, and common risk_sup are blank since these variables are not used in the same regression.

Table 6.8: Correlation matrix of Independent Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Common risk_mrk	1											
(2) Common risk_ind		1										
(3) Common risk_sup			1									
(4) Board_Size	-0.04**	-0.07*	-0.05*	1								
(5) Ind_Directors	-0.03	-0.01	-0.01	0.14***	1							
(6) Ln_Sales	0.06	0.06	0.09	0.25*	0.27	1						
(7) Div_Yld	0.14**	0.23**	0.21*	-0.06*	0.00	-0.13*	1					
(8) MTB	-0.06	-0.01	0.01	0.03	-0.02	-0.03	0.14*	1				
(9) Multiple	0.05*	0.09*	0.12*	0.06*	0.16	0.12*	0.03	0.07	1			
(10) Instit_Own	0.03	-0.01	-0.01	0.13	-0.04**	-0.11	-0.01	-0.02	0.00	1		
(11) Ind_Con	-0.11	-0.20	-0.20	0.06	-0.01	0.15	-0.07*	-0.04*	0.06*	-0.03	1	
(12) Adj_Ret	0.02	0.06	0.06	-0.06	-0.11**	0.09*	-0.05*	-0.07	-0.06*	-0.04	0.01	1

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6.6 Empirical Results

6.6.1 Multinomial Logistic Regression

Panel A of Table 6.9 reports results of the multinomial logit model with three performance standards. The R^2 of 0.16 is in line with previous studies conducted by Carter et al. (2009) and Gong et al. (2011). The results in Column 2 demonstrate that firms which share greater common risk with their market peers are significantly more likely to prefer RPE exclusively over the joint use of relative and absolute measures in their long-term incentive plans. This is consistent with the intuition that firms select RPE-based conditions exclusively when they face greater common risk with peers. Similarly, firms subject to higher levels of common risk are significantly less likely to adopt absolute measures than the alternative absolute and relative measure jointly in compensation contracts. As shown in Table 6.5, industry and supersector also represent potential peers for relative evaluation purposes. Subsequently, we also estimate separate models using industry beta and supersector beta to compute common risk, and the results in Columns 3 to 6 of Panel A in Table 6.9 reinforce our previous finding that companies aim to filter exogenous shocks in selecting performance standards in executive compensation contracts.

Column 1 shows that the coefficient of sales is positive and significant, implying firms with higher sales are more likely to employ absolute measures exclusively. One interpretation of this finding is that large firms have a more complex business structure with various segments which could make the selection of similar peer group difficult. Thus, they prefer to implement absolute growth measures, which can be further evidenced from the insignificant association between sales and the exclusive use of RPE in Column 2. The results in Column 1 also show that as board size increases, the likelihood of selecting absolute measures decreases in comparison to

the alternative of absolute and relative measures jointly. Additionally, the coefficent of board size is positive but statistically insignificant for the likelihood of the selection of relative measures over reference category. This suggests that firms with larger boards prefer to, at least, include relative measures in a compensation contract. The coefficients for independent directors are negative and significant for both the likelihood of selecting the absolute measures exclusively and relative measures exclusively. These results indicate that firms with a higher percentage of independent directors prefer to employ both relative and absolute measures signifying better corporate governance, leading to effective monitoring of compensation packages.

Further, we also detect a negative relationship between the percentage of institutional ownership and the selection of RPE exclusively. That is, there exists a significant probability that as institutional ownership increases, the multinomial log odds for preferring relative measures exclusively over the alternative of absolute and relative jointly decreases. This gives an indication of good corporate governance, in that a greater presence of institutional owners leads to a greater use of both relative and absolute measures in compensation contracts. Evidence for the effective monitoring role of institutional investors has been observed in previous UK studies (e.g. Ozkan, 2007).

Concerning market to book ratio, the coefficient is negative and significant in determining relative measures exclusively, showing that firms with greater market growth opportunities are less likely to use RPE exclusively relative to the base category. This result is in line with the study by Albuquerque (2009), which argues that RPE is less beneficial for firms with higher growth opportunities. The coefficient on multiple plans is negative and significant for the likelihood of RPE selection exclusively (-1.29, p-value<0.01), and the likelihood of absolute

measure exclusively (-0.65, p-value<0.01) compared to firms that do not award RPE. This suggests that firms which award multiple plans are less inclined to employ relative or absolute measures exclusively over the alternative base category. One interpretation is that firms employ a mix of relative and absolute performance targets if they operate multiple long-term incentive plans.

Firms from more highly concentrated industries are less likely to implement RPE in all of their grants relative to base category. This finding is consistent with Carter et al. (2009), suggesting that firms in more concentrated industries do not prefer to employ RPE exclusively as a performance standard.

Turning now to industry-specific factors, the reference category used is the "consumer services" group. Based on the results in Column 2, firms in Basic Resources, Oil and Gas, Technology, Telecommunications and Utilities are more likely to select relative measures exclusively than firms in the consumer services industry. The choice of performance category is not influenced by year specific dummies.

Table 6.9: Multinomial logistic model estimating the probability of performance standards in compensation contracts

Panel A: Multinomial logistic model predicting various performance standards in compensation contracts with common risk, multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry-adjusted returns, industry concentration, and corporate governance variables. Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%) and *p < 0.1(10%), based on robust standard errors and are reported in parentheses. Definition of all variables used in this study is included in Appendix A to Chapter 6. Base Category: Absolute and RPE measure jointly.

Variable	Model 1 Absolute exclusively	RPE exclusively	Model 2 Absolute exclusively	RPE exclusively	Model 3 Absolute exclusively	RPE exclusively
	(1)	(2)	(3)	(4)	(5)	(6)
	Market	Market	Industry	Industry	Supersector	Supersector
Common_Risk	-0.498***	0.753***	-0.510**	0.769***	-0.274	0.677***
	(0.184)	(0.180)	(0.218)	(0.266)	(0.216)	(0.260)
Board_Size	-0.976**	0.293	-0.924**	0.355	-0.893**	0.326
	(0.404)	(0.551)	(0.408)	(0.554)	(0.406)	(0.544)
Ind_Directors %	-0.022**	-0.030***	-0.025**	-0.031***	-0.025**	-0.030***
	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)
Ln_Sales	0.208***	-0.081	0.205***	-0.081	0.204***	-0.087
	(0.063)	(0.087)	(0.063)	(0.087)	(0.063)	(0.087)
Div_Yld	-0.009	-0.007	-0.007	-0.022	-0.018	0.001
	(0.051)	(0.058)	(0.050)	(0.061)	(0.049)	(0.058)
MTB	-0.015	-0.053**	-0.015	-0.056***	-0.014	-0.054**
	(0.012)	(0.021)	(0.012)	(0.021)	(0.012)	(0.021)
Multiple	-0.647***	-1.293***	-0.645***	-1.191***	-0.660***	-1.205***
	(0.191)	(0.261)	(0.189)	(0.251)	(0.190)	(0.250)
Instit_Own %	-0.005	-0.029***	-0.005	-0.030***	-0.005	-0.029***
	(0.006)	(0.011)	(0.006)	(0.011)	(0.006)	(0.011)
Ind_Con	0.646	-3.583***	0.451	-3.838***	0.481	-4.312***
	(1.114)	(1.263)	(1.094)	(1.250)	(1.104)	(1.249)
Adj_Ret	0.157	0.146	0.142	0.096	0.114	0.100
	(0.253)	(0.302)	(0.254)	(0.287)	(0.249)	(0.287)
Industry						
Basic Resources	-0.942*	1.998***	-1.195**	2.548***	-1.148**	2.588***
	(0.501)	(0.518)	(0.474)	(0.478)	(0.469)	(0.475)
Consumer Goods	-0.511	-0.075	-0.580*	0.052	-0.555*	0.043
	(0.325)	(0.451)	(0.326)	(0.450)	(0.330)	(0.451)
Financials	-0.016	-0.268	-0.223	0.021	-0.132	-0.112
	(0.288)	(0.426)	(0.290)	(0.422)	(0.288)	(0.418)
Industrials	-0.368	-2.662***	-0.458*	-2.633***	-0.439	-2.772***
	(0.270)	(0.599)	(0.269)	(0.591)	(0.268)	(0.602)
Oil & Gas	-2.497**	1.829***	-2.746***	2.201***	-2.706***	2.225***
	(1.056)	(0.522)	(1.035)	(0.520)	(1.046)	(0.518)
Technology	0.316	0.864	0.235	1.079*	0.228	1.135**
	(0.403)	(0.572)	(0.400)	(0.560)	(0.398)	(0.556)
Telecommunications	-1.597**	2.018**	-1.690**	2.360***	-1.520**	2.321***
	(0.778)	(0.786)	(0.773)	(0.786)	(0.770)	(0.791)
Utilities	-1.942**	1.783***	-1.950**	2.134***	-1.777**	2.009***
	(0.806)	(0.499)	(0.810)	(0.528)	(0.803)	(0.522)
Year						
2010	0.123	-0.050	0.114	-0.053	0.106	-0.069
	(0.277)	(0.361)	(0.274)	(0.352)	(0.272)	(0.353)
2011	0.007	-0.111	-0.012	-0.147	0.011	-0.198
	(0.270)	(0.380)	(0.270)	(0.363)	(0.270)	(0.363)
2012	0.147	-0.072	0.107	-0.045	0.115	-0.029
	(0.271)	(0.370)	(0.272)	(0.363)	(0.271)	(0.360)
2013	0.072	-0.206	-0.111	-0.052	-0.045	-0.088
	(0.278)	(0.379)	(0.288)	(0.389)	(0.287)	(0.386)
Constant	0.638	2.107	0.874	2.075	0.607	2.303*
	(1.035)	(1.402)	(1.058)	(1.393)	(1.047)	(1.390)
Observations	894		894		894	
Log likelihood	-675		-679		-683	
Pseudo R-squared	0. 17		0.15		0.16	

6.6.2 Marginal Effects

In addition to multinomial logit coefficient and the levels of significance, we also present marginal effects, evaluated at the mean, of a change in the independent variable (Table 6.9, Panel B). The marginal effects display the relative importance of each explanatory variable in predicting the probability of event occurrence. For a dummy variable, marginal effects show by how much the probability of performance choices will change for shift in the dummy variable from 0 to 1; however, for a continuous variable, they show how much the probability will change with a one-unit change in the value of the independent variable.

Panel B of Table 6.9 reports the marginal effects of multinomial logistic regression. Column 2 shows that one unit increase in common risk_market is associated with a 6.0 percent increase in the probability of incorporating RPE exclusively in their long-term incentive plans. By contrast, the results in Column 1 reveal that one-unit increase in common risk_market results in a 9.6 percent decrease in the probability of selecting absolute measure exclusively. To look more specifically at the joint use of RPE and absolute measure sample, according to Column 7, a one-unit increase in common risk_market results in a 3.6 percent increase in the likelihood of selection of relative and absolute measures jointly. These results are in line with our hypothesis and show that firms filter common shocks and yield a more informative measure to assess agents' performance.

Column 1 reveals that the estimated marginal effect of sales is 0.036, implying that an increase of 1 unit in log sales raises the probability of the absolute measure in compensation contracts by 3.6 percentage points. However, the marginal effect of institutional ownership (column 7, absolute and relative measure jointly) is 0.002, which indicates that the probability of absolute

and relative measure selected increases by 0.2 percent for a 1-unit increase in institutional ownership. In addition, greater board size and percentage of independent directors are also associated with adoption of absolute and relative measures jointly. However, the magnitude of the board size coefficient is higher, where the marginal effect of board size shows that an increase in one unit of board size will increase the probability of absolute and relative measures jointly by 13.4 percent (column 7). These results may be interpreted as evidence that board members and independent directors provide monitoring role on the choice of performance standards in compensation contracts.

In regard to marginal effects of the coefficient on multiple plan dummy in Column 7, the probability of firms choosing absolute and relative measures jointly in multiple plans is 16.7% higher respectively than firms which do not operate multiple equity plans. In Column 1, concerning industry dummies, the probability of employing the absolute measure exclusively reduces by 27.1%, 24.7% and 25.6% in the Oil and Gas, Telecommunications and Utility industries, respectively compared to the Consumer Services group, demonstrating that firms prefer not to employ absolute measures within these industries. Also, only Industrials firms employ absolute and relative measures jointly in compensation contracts. The marginal effects for firms with higher industry betas display larger positive coefficients than that of firms with higher market beta as shown in Columns 2 and 4. This suggests that there is greater likelihood that firms with highly volatile industry returns filter out common shocks than for firms with highly volatile market returns.

Table 6.9: Marginal effects of impact of common shocks on performance standards

Panel B: Marginal effects of common risk, multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry-adjusted returns, industry concentration, and corporate governance variables on different performance standards in compensation contracts. Marginal effects represent the effect of a unit change in the variable on the probability of an outcome (RPE exclusively, absolute exclusively, and RPE and absolute measures jointly). Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%) and *p < 0.1(10%), based on robust standard errors and are reported in parentheses.

Variable	Model 1		Model 2		Model 3	
	Absolute exclusively	RPE exclusively	Absolute exclusively	RPE exclusively	Absolute exclusively	RPE exclusively
	(1)	(2)	(3)	(4)	(5)	(6)
	Market	Market	Industry	Industry	Supersector	Supersector
Common_Risk	-0.096***	0.060***	-0.100***	0.062***	-0.059	0.052***
	(0.030)	(0.014)	(0.037)	(0.019)	(0.037)	(0.019)
Board_Size	-0.170**	0.036	-0.164**	0.040	-0.159**	0.038
	(0.067)	(0.038)	(0.069)	(0.038)	(0.069)	(0.038)
Ind_Directors %	-0.003**	-0.002**	-0.004**	-0.002**	-0.004**	-0.002**
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Ln_Sales	0.036***	-0.009	0.036***	-0.009	0.037***	-0.009
	(0.010)	(0.006)	(0.011)	(0.006)	(0.011)	(0.006)
Div_Yld	-0.001	-0.000	-0.001	-0.001	-0.003	0.000
	(0.008)	(0.004)	(0.008)	(0.004)	(0.008)	(0.004)
MTB	-0.002	-0.003**	-0.002	-0.004***	-0.002	-0.004**
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Multiple	-0.089***	-0.079***	-0.091***	-0.072***	-0.094***	-0.073***
	(0.032)	(0.021)	(0.032)	(0.020)	(0.032)	(0.020)
Instit_Own %	-0.000	-0.002***	-0.000	-0.002***	-0.000	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ind_Con	0.167	-0.257***	0.140	-0.273***	0.155	-0.310***
	(0.185)	(0.088)	(0.184)	(0.088)	(0.187)	(0.089)
Adj_Ret	0.024	0.008	0.023	0.004	0.018	0.005
	(0.042)	(0.020)	(0.042)	(0.019)	(0.042)	(0.019)
Industry						
Basic Resources	-0.210***	0.392***	-0.263***	0.513***	-0.259***	0.533***
	(0.049)	(0.104)	(0.042)	(0.089)	(0.041)	(0.087)
Consumer Goods	-0.092*	0.005	-0.113*	0.017	-0.106*	0.017
	(0.055)	(0.039)	(0.058)	(0.037)	(0.058)	(0.039)
Financials	0.003	-0.020	-0.047	0.007	-0.025	-0.005
	(0.059)	(0.031)	(0.058)	(0.032)	(0.059)	(0.031)
Industrials	-0.046	-0.085***	-0.070	-0.072***	-0.063	-0.079***
	(0.051)	(0.022)	(0.053)	(0.019)	(0.052)	(0.020)
Oil & Gas	-0.271***	0.382***	-0.305***	0.456***	-0.298***	0.474***
	(0.041)	(0.108)	(0.039)	(0.106)	(0.038)	(0.105)
Technology	0.032	0.086	0.007	0.109	-0.001	0.125
	(0.083)	(0.073)	(0.084)	(0.074)	(0.082)	(0.078)
Telecom	-0.247***	0.416**	-0.281***	0.481***	-0.268***	0.480***
	(0.046)	(0.176)	(0.046)	(0.172)	(0.048)	(0.173)
Utilities	-0.256***	0.364***	-0.285***	0.430***	-0.272***	0.408***
	(0.042)	(0.103)	(0.043)	(0.111)	(0.045)	(0.110)
Year-specific effects	Yes		Yes		Yes	
Observations	894		894		894	

Table 6.9. Panel B- continued

Definition of all variables used in this study is included in Appendix A to Chapter 6.

Variable	Model 1 Absolute & RPE jointly	Model 2 Absolute & RPE jointly	Model 3 Absolute & RPE jointly
	(7)	(8)	(9)
	Market	Industry	Supersector
Common_Risk	0.036*	0.038*	0.007
	(0.021)	(0.022)	(0.039)
Board_Size	0.134*	0.124*	0.122
	(0.072)	(0.074)	(0.074)
Ind_Directors %	0.005***	0.005***	0.005***
	(0.002)	(0.002)	(0.002)
Ln_Sales	-0.028**	-0.028**	-0.027**
	(0.012)	(0.012)	(0.012)
Div_Yld	0.002	0.002	0.003
	(0.009)	(0.009)	(0.009)
MTB	0.005*	0.005*	0.005*
	(0.003)	(0.003)	(0.003)
Multiple	0.167***	0.163***	0.167***
	(0.035)	(0.035)	(0.035)
Instit_Own %	0.002**	0.002**	0.002*
	(0.001)	(0.001)	(0.001)
Ind_Con	0.090	0.133	0.155
	(0.197)	(0.196)	(0.198)
Adj_Ret	-0.032	-0.027	-0.023
	(0.045)	(0.045)	(0.045)
Industry			
Basic Resources	-0.181*	-0.250***	-0.274***
	(0.103)	(0.090)	(0.087)
Consumer Goods	0.086	0.095	0.089
	(0.062)	(0.063)	(0.064)
Financials	0.017	0.040	0.030
	(0.060)	(0.061)	(0.061)
Industrials	0.132**	0.142***	0.142***
	(0.053)	(0.054)	(0.054)
Oil & Gas	-0.111	-0.152	-0.176
	(0.111)	(0.109)	(0.108)
Technology	-0.118	-0.116	-0.124
	(0.091)	(0.091)	(0.091)
Telecom	-0.168	-0.200	-0.211
	(0.169)	(0.164)	(0.164)
Utilities	-0.108	-0.144	-0.136
	(0.107)	(0.115)	(0.114)
Year-specific effects	Yes	Yes	Yes
Observations	894	894	894

6.6.3 RPE Plan Characteristics

6.6.3.1 Peer Group Choice

The previous tests confirm the association between common risk and choice of RPE plan, but they do not shed light on characteristics of the RPE plans themselves. One key RPE characteristic is the comparator group used to evaluate relative performance. Firms can select different peer groups, with RPE theories proposing that the choice of peer group should be based on their ability to filter common risk. We now turn our attention to the issue of peer group selection, and the focus will be on RPE based plans for the remainder of the study. As shown in Table 6.5, peer group choices consist of three categories: index, custom peers (self-selected peers), and sector peers. The dependent variable used in this study is nominal and consists of three independent choices which cannot be ordered in a meaningful way. Thus, similar to the previous section, we perform multinomial logistic regressions to examine peer group choices, with a reference category against which to test. Here, we choose the reference category as the use of a broad index as a peer group in long-term incentive plans. We control for plan types by using dummies; dummy option is equal to one if the company grants only options in their compensation contract, and zero otherwise. The dummy for matching plans is constructed in a similar way.

$$\begin{aligned}\text{Prob. of RPE Peer Group Choice}_{j,t} = {} & \alpha + \beta_1 \text{ Common Risk}_{i,t-1} + \beta_2 \text{ Industry Concentration}_{i,t-1} \\ & \beta_3 \text{ Sales}_{i,t1-1} + \beta_4 \text{ MTB}_{i,t-1} + \sum_{j=1}^{p} \gamma_j \text{Corporate Governance Variables}_{i,t-1} \\ & + \text{n control variable}_{i,\,t-1} + \varepsilon_{i,\,t} \end{aligned} \tag{6.6}$$

for firm i at time period t, where $\varepsilon_{i,t}$ is the error term.

The results are presented in Table 6.10 and use similar independent variables to the previous section. Column 1 reveals that firms subject to high levels of exogenous shocks are significantly less likely to select custom peers over a predefined index. In Column 2, relating to the selection of sector peers, we find a negative and highly significant coefficient for common risk_market. This indicates that firms are less likely to select sector peers, over the alternative of broad index, when firms have a higher market beta. Both of these findings imply that when companies face greater common risk with FTSE 350 peers, they are less likely to employ bespoke or sector peer group relative to broad-based market peer group.

Column 3 shows that firms with highly volatile industry returns are less likely to prefer custom peers relative to the broad index category. This result suggests that market indices do a better job in filtering common risk if shocks are specific to the industry or supersector, consistent with Carter et al. (2009). However, in Columns 4 and 6, the coefficients for common risk_industry and common risk_supersector are positive but statistically insignificant for the likelihood of selection of sector peers. This indicates that firms with higher market or sector beta do not influence the selection of sector peer group. This is puzzling since we expect firms with greater common risk with sector peers should opt for sector category as opposed to broad index. Albuquerque (2009) argues that if external shocks are industry specific then broad index is not appropriate peer group, which is in line with what we expected. By contrast, our results show a positive but insignificant relationship between common risk_industry and sector peer selection. To conclude, these results show mixed support for theories that firms select peer group in such a manner to filter shocks from their relative performance.

Interestingly, the coefficients for sales show positive and significant association for both the likelihood of custom and sector peer group selection over the alternative broad index category. One possible interpretation of this association is that larger firms have a more complex business structure with many dimensions and the constituents of the market index (FTSE 350) are very different in their business operations as opposed to sector or custom peers. Thus, large firms do not select the broader index as an appropriate peer group, instead of selecting custom or sector peers to evaluate firm's performance. In Column 2, there is a significantly negative relationship at the 5% level between the probability of sector peer selection and the percentage of independent directors, implying firms with a greater proportion of independent directors are less likely to favour sector peers over the broad index category. This preference for broad index as a comparator group against which they benchmark firm's performance could be due to their limited understanding of the complexities involved in selection of peer group. Overall, we find little evidence that corporate governance characteristics impact the choice of peer group in RPE based contracts.

The coefficients for industry concentration are negative and significant for both the likelihood of custom and sector peer selection, suggesting that firms in more concentrated industries prefer to select a broad index relative to the other two categories. With respect to the multiple plan dummy, we find a positive and significant coefficient which indicates that companies which operate multiple plans are more likely to use sector peers than firms that grant single plans. This may be because firms grant multiple plans in order to select several peer groups to evaluate the performance of executives. The coefficients of year dummy indicate insignificant associations between different peer group choices. However, this result is not surprising, since we have already noted earlier in Table 6.9 that the choice of RPE also does not vary significantly with

time. This implies that peer group choices and the selection of RPE are not influenced by year specific dummies.

Overall, these results show some evidence of an association between common shocks and peer group selection. Regarding corporate governance characteristics, there is evidence that independent directors monitor the choice of the peer group in RPE based plans.

Table 6.10: Multinomial logistic model estimating the probability of peer group choices in compensation contracts

Multinomial logistic model predicting peer group choices in compensation contracts with common risk, multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry-adjusted returns, and industry concentration. Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%), *p < 0.1(10%), based on clustered standard errors at the RPE firm level and are reported in parentheses. Definition of all variables used in this study is included in Appendix A to Chapter 6.

Base Category: RPE Peer Group Choice (Broad Index)

	Model 1		**Model 2**		**Model 3**	
	Custom Peers	**Sector Peers**	**Custom Peers**	**Sector Peers**	**Custom Peers**	**Sector Peers**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Variable	Market	Market	Industry	Industry	Supersector	Supersector
Common_Risk	-0.693***	-0.572**	-0.854***	0.167	-0.740***	0.113
	(0.223)	(0.232)	(0.250)	(0.274)	(0.254)	(0.292)
Board_Size	-0.414	-0.687	-0.537	-0.357	-0.458	-0.413
	(0.575)	(0.642)	(0.582)	(0.664)	(0.581)	(0.657)
Ind_Directors %	0.016	-0.023**	0.011	-0.025**	0.011	-0.025**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Ln_Sales	0.294***	0.229**	0.274***	0.195**	0.274***	0.198**
	(0.102)	(0.098)	(0.100)	(0.097)	(0.100)	(0.097)
Div_Yld	-0.077	-0.074	-0.065	-0.111	-0.079	-0.107
	(0.056)	(0.071)	(0.058)	(0.069)	(0.057)	(0.071)
MTB	0.011	-0.001	0.012	0.000	0.012	-0.000
	(0.011)	(0.008)	(0.011)	(0.008)	(0.011)	(0.008)
Multiple	0.122	0.541**	0.091	0.563**	0.116	0.547**
	(0.222)	(0.247)	(0.222)	(0.248)	(0.220)	(0.248)
Instit_Own %	-0.268	1.009	-0.037	1.011	-0.113	1.038
	(1.159)	(1.286)	(1.152)	(1.286)	(1.147)	(1.275)
Ind_Con	-10.334***	-9.402***	-9.716***	-8.168***	-9.193***	-8.365***
	(1.783)	(2.065)	(1.725)	(2.054)	(1.638)	(2.031)
Adj_Ret	-0.585*	-0.325	-0.539*	-0.334	-0.563*	-0.334
	(0.306)	(0.358)	(0.318)	(0.355)	(0.314)	(0.359)
Industry						
Basic Resources	2.566***	3.461***	2.001***	2.678***	1.932***	2.728***

	(0.708)	(0.703)	(0.625)	(0.596)	(0.626)	(0.604)
Consumer Goods	2.092***	1.691***	2.014***	1.524***	1.986***	1.504***
	(0.397)	(0.544)	(0.403)	(0.536)	(0.396)	(0.537)
Financials	1.014**	1.691***	0.843*	1.568***	0.962**	1.548***
	(0.425)	(0.432)	(0.430)	(0.447)	(0.427)	(0.435)
Industrials	-1.516***	-2.016***	-1.416***	-2.065***	-1.314***	-2.084***
	(0.348)	(0.426)	(0.346)	(0.431)	(0.337)	(0.427)
Oil & Gas	1.980***	17.666***	1.909***	17.638***	1.701***	17.719***
	(0.474)	(0.747)	(0.482)	(0.723)	(0.454)	(0.722)
Technology	-0.447	2.549***	-0.642	2.123***	-0.759	2.168***
	(1.188)	(0.655)	(1.196)	(0.649)	(1.190)	(0.649)
Telecommunications	3.044***	3.972***	2.814***	3.741***	2.811***	3.770***
	(0.913)	(1.002)	(0.883)	(1.002)	(0.886)	(1.008)
Utilities	0.134	1.790***	0.105	1.929***	0.234	1.933***
	(0.673)	(0.599)	(0.682)	(0.605)	(0.680)	(0.606)
Year						
2010	0.200	0.257	0.211	0.199	0.218	0.182
	(0.321)	(0.392)	(0.324)	(0.396)	(0.320)	(0.396)
2011	-0.008	0.264	0.003	0.315	0.048	0.284
	(0.316)	(0.381)	(0.319)	(0.380)	(0.317)	(0.382)
2012	-0.297	0.261	-0.316	0.285	-0.346	0.299
	(0.319)	(0.378)	(0.319)	(0.385)	(0.320)	(0.384)
2013	-0.512	0.053	-0.623*	0.152	-0.591*	0.130
	(0.349)	(0.395)	(0.351)	(0.403)	(0.349)	(0.401)
Options	-0.531	0.461	-0.855*	0.484	-0.772	0.474
	(0.444)	(0.397)	(0.499)	(0.414)	(0.483)	(0.412)
Matching plans	1.452***	1.134*	1.389**	1.298**	1.400***	1.283**
	(0.539)	(0.592)	(0.541)	(0.584)	(0.537)	(0.584)
Constant	-1.504	0.632	-0.690	-0.269	-1.050	-0.100
	(1.619)	(1.830)	(1.605)	(1.822)	(1.590)	(1.798)
Plan types dummies	Yes		Yes		Yes	
Observations	672		672		672	
Log likelihood	-551		-545		-549	
Pseudo R-squared	0.16		0.16		0.16	

6.6.3.2 Initial and Maximum Threshold Vesting

Previous research by Zakaria (2012) revealed that firms tended to employ single performance hurdles to achieve a maximum payout in UK compensation contracts. By contrast, the present study finds that firms rarely use performance hurdles in compensation contracts, as depicted in the descriptive statistics in Table 6.1. This infrequent use of single performance hurdles sheds

light on the optimal contracting approach since Brennan (2001) shows that firms' inclusion of performance hurdles in performance-vested equity grants is unlikely to be considered as optimal, as performance hurdles is a fixed point and not a range. Therefore, even if firms include a performance hurdle, they will still employ another performance measure which will include a payout range as shown in Section 5.6.

Carter et al. (2009) show that there exists a variation in the percentile ranking that must be attained for initial rewards to vest. By contrast, the descriptive statistics of our present study reveals that firms usually incentivize executives at median (50th percentile ranking) performance and this remains unchanged. Nonetheless, there exist variations which belong to the maximum performance required to achieve full reward. The vesting levels at minimum threshold can vary from 0% to 50% for different firms. Hence, we investigate the determinants of vesting of equity at initial and upper quartile performance thresholds.

We now progress to examining the differences in the payout structure of RPE plans, using OLS regression models with industry and time dummies. We perform this analysis at the plan level, as individual plan characteristics can vary, and in our estimation, standard errors are clustered by firm.

$$\begin{aligned}\text{RPE Plan Characteristics}_{i,t} = {} & \alpha + \beta_1 \text{ Common Risk}_{i,t-1} + \beta_2 \text{ Industry Concentration}_{i,t-1} \\ & \beta_3 \text{ Sales}_{i,t1-1} + \beta_4 \text{ MTB}_{i,t-1} + \sum_{j=1}^{p} \gamma_j \text{Corporate Governance Variables}_{i,t-1} \\ & +\text{n control variable}_{\text{i, t-1}} + \varepsilon_{\text{i, t}}\end{aligned} \tag{6.7}$$

The results in Panel A of Table 6.11 demonstrate that the coefficient on common risk is negative and statistically significant at the 1% level in determining the percentage of equity vesting at the initial threshold. This indicates that firms facing greater common risk tend to employ tougher conditions by setting lower percentage of equity vest at median percentile ranking.

Concerning corporate governance variables, firms with a greater percentage of independent directors also tend to set lower vesting levels at or above median performance. This suggests that independent directors play a monitoring role which is not just limited to the selection of RPE or peer group. On the other hand, firms which grant multiple plans employ higher levels of initial equity vesting at median performance. One possible explanation is that firms with multiple long-term incentive plans set different performance metrics, and thus, they do not employ tougher performance conditions than firms which operate a single plan in their long-term incentive plan.

To investigate the determinants of vesting at upper quartile performance, we exclude plans where the required firm performance should be above the median plus an additional percentage growth p.a. and the plans where the required performance should be above the Index plus an additional percentage growth p.a. over a three-year period to receive the maximum payout. In these plans, performance targets are determined ex-post and remain unknown. This is because it is nearly impossible to work out the required performance which would result in percentage vesting at the upper quartile.

In Panel B of Table 6.11, we show that the coefficient of common risk is negatively related to the percentage of equity vesting at the 75^{th} percentile ranking, indicating that firms which face greater common risk tend to employ lower vesting levels at upper quartile percentile ranking. This suggests that firms opt for tougher performance conditions by operating outperformance plans that have a maximum reward at the upper quintile or decile, and also indicates that firms have shifted away from traditional benchmarking evaluation, where the maximum reward is at the 75^{th} percentile. Multiple plans, on the other hand, are not associated with the percentage of equity vesting at upper quartile percentile ranking. Firms with higher board size and percentage

of independent directors employ a lower percentage of equity vesting at the upper quartile threshold. These findings suggest that the board and independent directors play a monitoring role in compensation contracts.

6.6.3.3 Target Spread

The results discussed above indicate that common risk and corporate governance factors impact the percentage of equity vesting set at median and upper quartile percentile rankings. However, they do not consider these threshold targets for vesting to occur. The current study also observes variations in threshold targets, most of which belong to maximum performance required to achieve full vesting.

Another important RPE characteristic is the target spread, that is, the difference between the maximum and minimum percentile rankings for vesting to occur, in order to evaluate relative performance. Typically, the initial and maximum percentile rankings are the 50^{th} percentile (median) and the 75^{th} percentile (upper quartile) respectively, with a target spread of 25. The target spread for firms with a maximum percentile ranking of 80th percentile (upper quintile) is therefore 30. Hence, the target spread is greater in firms, where the percentile ranking required for maximum vesting is at the upper quintile or decile than firms which opt for maximum vesting at the traditional upper quartile percentile ranking. There exists greater diversity in the maximum percentile ranking at which the maximum possible reward is paid out, as observed in Table 6.6.

The spread relates to the performance target (percentile ranking), and the equity payout corresponds to the achievement of percentile ranking. If the main aim of the target setting is to

incentivize executives, then we would expect a greater target spread. Companies with a wider performance spread and a lower percentage of equity vesting at initial or upper quartile performance target are considered to have challenging performance conditions. Here, we are keen to explore whether there exists a relationship between the spread and the impact of common shocks. Similar to the previous section, we employ an OLS regression model, with standard errors robust to clustering at the firm level.

The results in Column 1 and 2 of Table 6.11 (Panel C) demonstrate that the coefficient on the target spread is positive and statistically significant at 10% level. This result infers weak evidence of the existence of a relationship between the spread and common risk. Meanwhile, in Column 3, the coefficient on common risk_supersector are found to be insignificantly associated with the spread. This finding contrasts with the previous empirical evidence reported by Carter et al. (2009), who find that the spread is negatively associated with common risk. It could be argued that characteristics of RPE have been changed in the meantime, so that the firms, now, tend to operate plans with maximum payout at upper quintile or decile percentile rankings. At the same time, firms employ fewer single performance hurdles in their long-term incentive plans. Due to different settings, the previous results cannot be generalized. The coefficient on board size is positive and statistically significant at the 5% level, implying that firms with a larger board size use tougher performance criteria by setting wider target spreads. This is in line with the view that larger boards provide more effective monitoring of the design of compensation packages as they tend to have larger remuneration committees.

The results in the previous section indicate that firms which operate multiple equity plans for their executives tend to set higher levels of equity vesting at the initial performance threshold. However, multiple plans have no significant effect on the target spread. Finally, we detect a

significant relationship between sales and target spread. These results are similar to those using a percentage of equity vesting at the initial threshold as a dependent variable but in opposite directions, implying that firms with higher sales tend to select tougher performance conditions.

To sum up, these results clearly suggest the impact of common risk and corporate governance variables on characteristics of RPE. However, institutional ownership does not influence the characteristics of RPE.

6.6.4 Robustness Tests

In this section, we subject the results presented in a variety of robustness tests, all of them available in the Appendix to Chapter 6. In order to study the determinants of RPE selection, we also use alternative proxies for common risk (correlation and R-squared) as shown in Table A.6.1 and Table A.6.2 in the Appendix to Chapter 6. The results reinforce our main findings and show a positive association between common risk and firms' selection of RPE. As observed in Chapter 5, some consultants prefer to select certain performance measures. Hence, we also control for the identity of the remuneration consultant in determining the selection of RPE-based compensation contracts. In Table A.6.3 in the Appendix to Chapter 6, the reference group used in the present study for the identity of the remuneration advisor is "HNBS". The main results remain statistically significant between the choice of RPE plan and common risk. In addition, we find that firms which appoint Deloitte, Kepler, Mercer and Towers Watson as remuneration advisors are more likely to employ absolute measures relative to the remuneration advisor "HNBS". This suggests the presence of institutional isomorphism in performance standards of compensation contracts.

Table 6.11

Panel A: Regressions of impact of common risk on Initial Vesting

This table represents the estimation of results for percentage of vesting level occurring at minimum performance, as set by the firms against common risk, multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry-adjusted returns and industry concentration. The dependent variable is RPE_IV. This table presents the results of OLS with industry and time dummies. Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%), *p < 0.1(10%), based on clustered standard errors at the RPE firm level and are reported in parentheses. Definition of all variables used in this study is included in Appendix A to Chapter 6.

	(1)	(2)	(3)
Variables	**Market**	**Industry**	**Supersector**
Common_Risk	-2.393***	-2.109**	-2.168**
	(0.898)	(1.034)	(1.036)
Board_Size	1.319	1.471	1.460
	(2.535)	(2.548)	(2.535)
Ind_Directors %	-0.107**	-0.105**	-0.106**
	(0.050)	(0.050)	(0.049)
Ln_Sales	0.044	-0.005	0.005
	(0.324)	(0.325)	(0.324)
Div_Yld	-0.471**	-0.413*	-0.441**
	(0.227)	(0.222)	(0.219)
MTB	-0.015	-0.015	-0.015
	(0.023)	(0.024)	(0.023)
Multiple	2.333**	2.383**	2.469***
	(0.929)	(0.925)	(0.914)
Instit_Own %	0.01	0.008	0.007
	(0.022)	(0.023)	(0.023)
Ind_Con	-1.478	-1.908	-1.481
	(5.415)	(5.223)	(5.034)
Adj_Ret	-0.504	-0.576	-0.573
	(0.761)	(0.735)	(0.726)
Industry			
Basic Resources	5.454*	4.565*	4.589*
	(2.791)	(2.712)	(2.703)
Consumer Goods	1.397	1.244	1.343
	(1.203)	(1.194)	(1.182)
Financials	-0.0625	-0.772	-0.461
	(1.375)	(1.267)	(1.308)
Industrials	0.449	0.297	0.575
	(1.672)	(1.617)	(1.677)
Oil & Gas	1.719	1.195	1.274
	(2.373)	(2.308)	(2.301)
Technology	3.392**	3.188*	3.248**
	(1.654)	(1.634)	(1.639)
Telecommunications	9.553**	9.011*	9.292**
	(4.610)	(4.647)	(4.577)
Utilities	0.170	0.113	0.470
	(1.595)	(1.511)	(1.531)
Year			
2010	0.299	0.373	0.423
	(0.444)	(0.464)	(0.467)
2012	-1.377*	-0.130	-0.021
	(0.713)	(0.455)	(0.443)
2013	-0.824	-0.567	-0.653
	(0.568)	(0.541)	(0.559)
2014	-1.582**	-1.397**	-1.355*
	(0.675)	(0.683)	(0.687)
Constant	32.02***	31.95***	31.71***
	(6.011)	(5.972)	(6.002)
Plan types dummies	Yes	Yes	Yes
Observations	672	672	672
R-squared	0.218	0.214	0.215

Table 6.11

Panel B: Regressions of impact of common risk on Upper Quartile Vesting

This table represents the estimation of results for percentage of vesting level which occurs at upper quartile performance as set by the firms against common risk, multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry-adjusted returns, and industry concentration. The dependent variable is RPE_UQV This table presents the results of OLS with industry and time dummies. Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%), *p < 0.1(10%), based on clustered standard errors at the RPE firm level and are reported in parentheses. Definition of all variables used in this study is included in Appendix A to Chapter 6.

	(1)	(2)	(3)
Variable	**Market**	**Industry**	**Supersector**
Common_Risk	-2.820**	-3.412**	-3.447**
	(1.116)	(1.418)	(1.380)
Board_Size	-4.511**	-5.867***	-5.878***
	(2.095)	(2.102)	(2.119)
Ind_Directors %	-0.143**	-0.140**	-0.139**
	(0.0671)	(0.0678)	(0.0675)
Ln_Sales	-0.812**	-0.742*	-0.730*
	(0.377)	(0.377)	(0.375)
Div_Yld	-0.359	-0.317	-0.362
	(0.223)	(0.246)	(0.229)
MTB	0.0583	0.066	0.068
	(0.0541)	(0.053)	(0.051)
Multiple	0.275	0.237	0.337
	(1.031)	(1.033)	(1.038)
Instit_Own %	0.012	0.015	0.014
	(0.040)	(0.039)	(0.040)
Ind_Con	-4.442	-4.487	-3.784
	(8.422)	(8.497)	(8.268)
Adj_Ret	1.059	1.212	1.178
	(0.959)	(0.968)	(0.966)
Industry			
Basic Resources	5.492	3.635	3.634
	(3.441)	(3.355)	(3.357)
Consumer Goods	3.870	3.739	3.907
	(2.796)	(2.835)	(2.844)
Financials	4.551**	3.646*	4.157*
	(2.091)	(2.161)	(2.114)
Industrials	3.452	3.288	3.743*
	(2.126)	(2.187)	(2.161)
Oil & Gas	3.640	2.537	2.737
	(3.725)	(3.475)	(3.462)
Technology	4.227	3.950	4.039*
	(2.560)	(2.559)	(2.433)
Telecommunications	6.314	5.290	5.775
	(3.965)	(3.938)	(3.950)
Utilities	6.561***	5.410**	6.212**
	(2.493)	(2.448)	(2.405)
Year			
2010	-0.00562	-0.231	-0.171
	(0.681)	(0.652)	(0.653)
2012	0.482	0.456	0.583
	(0.455)	(0.467)	(0.475)
2013	0.931	0.672	0.525
	(0.628)	(0.635)	(0.612)
2014	0.561	-0.273	-0.199
	(0.816)	(0.864)	(0.857)
Constant	128.1***	130.6***	130.1***
	(7.354)	(7.371)	(7.328)
Plan types dummies	Yes	Yes	Yes
Observations	530	530	530
R-squared	0.226	0.232	0.232

Table 6.11

Panel C: Regressions of impact of common risk on Target Spread

This table represents the estimation of results for different between minimum and maximum threshold performance target against common risk, multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry-adjusted returns and industry concentration. The dependent variable is RPE_Spread. This table presents the results of OLS with industry and time dummies. Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%), *p < 0.1(10%), based on clustered standard errors at the RPE firm level and are reported in parentheses. Definition of all variables used in this study is included in Appendix A to Chapter 6.

	(1)	(2)	(3)
Variable	**Market**	**Industry**	**Supersector**
Common_Risk	0.754*	0.815*	0.917
	(0.402)	(0.432)	(0.674)
Board_Size	2.170**	2.492**	2.470**
	(1.091)	(1.073)	(1.085)
Ind_Directors	-0.025	-0.025	-0.024
	(0.034)	(0.034)	(0.034)
Ln_Sales	0.524**	0.508**	0.504**
	(0.231)	(0.227)	(0.229)
Div_Yld	-0.057	-0.052	-0.044
	(0.127)	(0.139)	(0.133)
MTB	-0.019	-0.021	-0.022
	(0.035)	(0.034)	(0.034)
Multiple	0.425	0.477	0.446
	(0.634)	(0.632)	(0.641)
Instit_Own	0.010	0.009	0.009
	(0.013)	(0.013)	(0.013)
Ind_concent	-6.821**	-7.249**	-7.398**
	(3.204)	(3.290)	(3.320)
Adj_Ret	-0.543	-0.603	-0.602
	(0.650)	(0.702)	(0.715)
Industry			
Basic Resources	2.322*	2.982**	2.993**
	(1.379)	(1.233)	(1.265)
Consumer Goods	-1.839	-1.764	-1.792
	(1.215)	(1.238)	(1.242)
Financials	-2.873**	-2.700**	-2.792**
	(1.256)	(1.238)	(1.235)
Industrials	-2.698***	-2.743***	-2.847***
	(0.837)	(0.853)	(0.845)
Oil & Gas	-1.182	-0.813	-0.848
	(1.458)	(1.343)	(1.350)
Technology	-0.718	-0.507	-0.487
	(1.101)	(1.061)	(1.056)
Telecommunications	1.487	1.805	1.701
	(1.720)	(1.669)	(1.709)
Utilities	-1.149	-0.684	-0.846
	(1.956)	(1.761)	(1.767)
Year			
2010	0.386	0.488	0.483
	(0.520)	(0.517)	(0.520)
2012	-0.294	-0.319	-0.345
	(0.491)	(0.498)	(0.495)
2013	0.0778	0.133	0.195
	(0.522)	(0.528)	(0.533)
2014	-0.0207	0.170	0.182
	(0.621)	(0.644)	(0.643)
Constant	17.52***	17.00***	17.02***
	(3.735)	(3.807)	(3.755)
Plan types dummies	Yes	Yes	Yes
Observations	530	530	530
R-squared	0.146	0.147	0.149

6.6.5 Actual Equity Vesting Percentages

Our next objective is to analyze the impact of different RPE plan characteristics on percentage of equity vesting. This analysis sheds light on the issue whether peer groups and other characteristics of the plan are chosen in a manner such as to attain greater vesting, resulting in greater executive compensation.

Table 6.12: Effect of RPE characteristics on percentage of equity vesting

Table 6.12 provides descriptive information on actual vesting of the number of plans for different RPE characteristics which are as follows: RPE peer group, target spread which is the difference between maximum and median percentile ranking, and initial vesting at median and vesting at upper quartile percentile ranking.

Panel A: Peer Group

Peer Group	Total Plans	Targets not achieved	Targets achieved	% of plans achieving target
Index	270	165	105	38.8%
Sector	48	39	9	18.7%
Custom	247	183	64	25.9%

Peer Group	Equity Vesting Ranges	No. of plans	Peer Group	Equity Vesting Ranges	No. of plans	Peer Group	Equity Vesting Ranges	No. of plans
Index Peers	0.00%	165	Sector Peers	0.00%	0	Bespoke peers	0.00%	183
	0.01%-25.00%	1		0.01%-25.00%	3		0.01%-25%	3
	25.01%-50.00%	14		25.01%-50.00%	22		25.01%-50%	8
	50.01%-75.00%	82		50.01%-75.00%	1		50.01%-75%	53
	75.01%-100.00%	8		75.01%-100.00%	0		75.01%-100%	0

Panel B: Target Spread

Spread	Total Plans	Targets not achieved	Targets achieved	% of plans achieving target
25.00-29.99	457	275	182	40.00%
30.00-34.99	65	52	13	18.5%
35.00-39.99	43	35	8	18.6%

Spread	Equity Vesting Ranges	No. of plans	Spread	Equity Vesting Ranges	No. of plans	Spread	Equity Vesting Ranges	No. of plans
25.00-29.99	0.00%	257	30.00-34.99	0.00%	42	35.00-39.99	0.00%	35
	0.01%-25.00%	0		0.01%-25.00%	2		0.01%-25.00%	1
	25.01%-50.00%	0		25.01%-50.00%	10		25.01%-50.00%	7
	50.01%-75.00%	168		50.01%-75.00%	1		50.01%-75.00%	0
	75.01%-100.00%	14		75.01%-100.00%	0		75.01%-100.00%	0

Panel C: Initial Vesting

IV	Total Plans	Targets not achieved	Targets achieved	% of plans achieving target
0.00%-10.00%	9	7	2	22.2%
10.01%-20.00%	59	38	21	35.5%
20.01%-30.00%	443	316	127	28.6%
30.01%-40.00%	29	20	9	31.0%
40.01%-50.00%	25	12	13	52.0%

IV	Equity Vesting Ranges	No. of plans	IV	Equity Vesting Ranges	No. of plans	IV	Equity Vesting Ranges	No. of plans
0.00%-10.00%	0.00%	7	10.01%-20.00%	0.00%	38	20.01%-30%	0.00%	316
	0.01%-25.00%	0		0.01%-25%	0		0.01%-25%	0
	25.01%-50.00%	2		25.01%-50%	11		25.01%-50%	14
	50.01%-75.00%	0		50.01%-75%	10		50.01%-75%	110
	75.01%-100.00%	0		75.01%-100%	0		75.01%-100%	2

IV	Equity Vesting Ranges	No. of plans	IV	Equity Vesting Ranges	No. of plans
30.01%-40.00%	0.00%	20	40.01%-50.00%	0.00%	12
	0.01%-25.00%	1		0.01%-25.00%	5
	25.01%-50.00%	0		25.01%-50.00%	0
	50.01%-75.00%	6		50.01%-75.00%	0
	75.01%-100.00%	2		75.01%-100.00%	8

Panel D: Vesting on achieving upper quartile performance

UQV	Total Plans	Targets not achieved	Targets achieved	% of plans achieving target
60.01%-70.00%	20	15	5	25.0%
70.01%-80.00%	29	24	5	17.2%
80.01%-90.00%	58	41	17	29.3%
90.01%-100.00%	468	325	143	30.5%

UQV	Equity Vesting Ranges	No. of plans	UQV	Equity Vesting Ranges	No. of plans
60.01%-70.00%	0.00%	15	70.01%-80.00%	0.00%	24
	0.01%-25.00%	2		0.01%-25.00%	0
	25.01%-50.00%	3		25.01%-50.00%	5
	50.01%-75.00%	0		50.01%-75.00%	0
	75.01%-100%	0		75.01%-100%	0

UQV	Equity Vesting Ranges	No. of plans	UQV	Equity Vesting Ranges	No. of plans
80.01%-90.00%	0.00%	41	90.01%-100.00%	0.00%	325
	0.01%-25.00%	1		0.01%-25.00%	0
	25.01%-50.00%	14		25.01%-50.00%	0
	50.01%-75.00%	2		50.01%-75.00%	135
	75.01%-100.00%	0		75.01%-100.00%	8

Table 6.12

Descriptive statistics on the breakdown of different RPE characteristics on targets achieved/ not achieved and actual range of vesting percentages, after three years, once the plan has been adopted, in long-term incentive plans. Panel A refers to the RPE characteristic dealing with the breakdown of plans that employ index, custom, and sector as RPE peer group. Panel B refers to the breakdown of plans which employ different target spread, difference between the maximum and minimum percentile ranking for initial and maximum vesting to occur in their compensation contracts. Panel C presents the breakdown of plans which achieve/not achieve median percentile ranking which, respectively, lead/ not lead to initial vesting as set by the firms. These plans with initial vesting are further studied on how many of these fall across the range of equity vesting percentages at the end of three years. Panel D presents the breakdown of plans which vest/ not vest after achieving/not achieving upper quartile percentile as set by the firms. These plans with upper quartile vesting are further examined on how many of these fall across the different range of equity vesting percentages at the end of three years. "Targets not achieved" represents the number of plans that have not achieved any performance target at all. "Targets achieved" represents the number of plans that have achieved some target for RPE characteristic under consideration. "% of plans achieving target" refers to the % of plans that have achieved some target for RPE characteristic under consideration. "No. of plans" refers to the number of plans that have or have not achieved the target and lies in that specific range for the specific type of RPE characteristic under consideration. "% of plans achieving target" refers to the % of plans that have achieved some target for RPE characteristic under consideration. "No. of plans" refers to the number of plans that have or have not achieved the target and lies in that specific vesting range for RPE characteristic under consideration. "Equity Vesting Ranges" refers to the range at which percentage of equity vesting occurs depending upon achieving or not achieving the target after three years of the plans' adoption.

Panel A of Table 6.12 provides a breakdown of RPE characteristics and its effect on equity vesting. The percentage of equity vesting depends upon the extent to which these performance criteria are met. Firstly, it clearly indicates that a greater number of firms selecting Index peers achieve some form of target than the firms selecting bespoke peers. Around 26% of the firms achieve the minimum performance threshold for bespoke peers as opposed to 39% of firms which select Index peers. Those achieving the target in the latter category, 78% of the firms lie between the range of 50% and 75%. This suggests that firms which select FTSE Index as a peer group not only meet the minimum threshold but also lie at a higher percentile ranking leads towards greater equity vesting.

Turning towards target spread, another RPE characteristic, Panel B of Table 6.12 shows that the more difficult the target, i.e. the wider the target spread, the harder it becomes for firms to achieve greater equity vesting. This is evident from the 80% of firms with target spread in the range of 30.00% to 34.99% which have not met at least the minimum threshold. This result also holds true for firms where the target spread is between the range of 35.00% and 39.99%. The results, therefore, indicate that 40% of firms which select traditional plans with a maximum performance at the 75th percentile, target spread between 25.00% and 29.99%, have in some way met their target. Now, of those achieving the performance target, 92% of plans lie in the range of 50% and 75%. This result implies that easier performance targets are met with greater ease.

However, we observe on Panel C of Table 6.12, that initial vesting at median percentile ranking are mostly concentrated in the range between 20.01% and 30%. Of these, 29% of firms have met the target in some way. Very few plans vest which set initial vesting between the range of 0% and 9.99%. Overall, no fixed pattern has been observed in plans with initial vesting at median percentile ranking.

Concerning upper quartile vesting in Panel D of Table 6.12, only 21% of firms meet the performance target which set vesting range of 60% to 80%. However, 31% of firms meet some form of target with a vesting range of 80% to 100%. This further strengthens our previous findings from target spread that softer targets are easier to achieve than more difficult targets. To conclude, the results show that firms which select index as a peer group achieve greater percentile ranking than firms opting for sector or custom peers. Although the choice of comparator group is of significance, nonetheless, there also exists considerable difference within the various characteristics of RPE.

6.7 Conclusion

This study examines the explicit use of RPE and peer group choices in a comprehensive sample of FTSE 350 UK firms from 2010 until 2015. The results from the multinomial logit model show that common shock influences the choice of absolute measures exclusively and RPE measures exclusively relative to base category in compensation contracts. These findings are in line with the predictions of agency theory that firms implement RPE based measures exclusively when performance metrics contain significant shocks which are common among peer companies. Additionally, the marginal effects show that common risk influences the choice of absolute and relative measures jointly (base category) and the results from alternate proxies (R-squared and correlation) reinforce the agency theory perspective.

Our findings on the choice of peer group show that firms choose broad market peers when external shocks are mostly dominated by market-specific shocks. On the other hand, if shocks are industry specific, firms prefer to employ broad market peers instead of opting for sector peers. Overall, we find mixed results on the associations between common risk and the choice of peer group.

There exists limited research on the characteristics of long-term incentive plans set by the firms, such as the target spread, initial threshold vesting, vesting at upper quartile performance and the choice of the peer group in compensation contracts. We document that firms with higher level of common risk tend to set tougher performance conditions. These results remain robust after common risk_industry and common risk_supersector are calculated using benchmark returns from the appropriate industry or supersector, respectively. However, the evidence

related to the effect of common risk on target spread is weak but statistically significant. Taken together, common shocks influence the characteristics of RPE-based contracts.

Our study is the first to provide a detailed industry breakdown of the various peer group categories used in relative performance evaluation, as reported in Table 6.4 and Table 6.5. We find that 42%, 42% and 16% of plans select custom (self-selected), index, and sector peers respectively, in their equity-based pay. In addition, this study also provides a breakdown of various outperformance conditions, and percentage of equity vesting at the initial and maximum threshold by industry. Almost 35% of plans employ performance conditions that have a maximum reward at upper quintile or decile in RPE-based measures. In contrast to the descriptive statistics of Carter et al. (2009) and Zakaria (2012), we find a shift in characteristics and selection of RPE across long-term incentive arrangements of UK firms.

Firms with high sales prefer to employ absolute measures which could be due to large firms finding it difficult to pick suitable peer groups. Furthermore, large companies also tend to employ a lower percentage of vesting at upper quartile percentile ranking and wider target spreads in RPE-based measures.

The board size, role of independent directors, and institutional ownership in determining performance choices has been an unexplored area. Our study finds that firms with greater percentage of independent directors are more likely to employ absolute and relative based measures jointly in compensation contracts. Their greater presence also brings tougher performance conditions in the form of lower percentage of equity vesting at median and upper quartile percentile ranking. However, board size has a negative influence on equity vesting at upper quartile performance and has positive impact on target spread. This implies the existence

of active monitoring by independent directors and board members. Although the presence of institutional investors influences the selection of RPE and absolute measures jointly, their greater presence is not associated with the RPE characteristics. This shows that institutional investors have powers to impose RPE preference in long-term incentive plans.

Finally, for the effect of RPE characteristics on equity vesting, we detect that firms which select Index as a peer group achieve greater equity vesting. For other RPE characteristics set by the firms, i.e. target spread and equity vesting at upper quartile, the results show that the easier the target, the more likely it is to be achieved, implying lower target spread and greater equity vesting at upper quartile percentile ranking.

The main aim of RPE is to filter out common shocks in evaluating the performance of the company. RPE could also be used opportunistically when firms select inappropriate peers in evaluating firms' relative performance or even firms employ RPE based contracts when absolute measures are more appropriate performance standards. This opportunistic behaviour leads executives to receive more long-term incentive CEO pay since they are picking such peers that make the relative performance target easier to meet.

APPENDIX TO CHAPTER 6

Variable Definition

This table provides a detailed description of the construction of all the variables used in this chapter.

Dependent Variables	Definition
Performance Standard	0 if long-term incentives consist of both RPE and non-RPE/absolute measures, 1 if firms' incentive grants have only RPE condition, and 2 if firms' incentive grants consist of absolute measure exclusively
Peer Group Choice	0 if firms choose Market Index as a comparator in RPE based plans, 1 if firms select custom peers in RPE plans, and 2 if firms employ sector peers as a comparator group in RPE based measures
RPE_IV (Initial Vesting)	% of initial RPE payout at median performance in RPE plans ranging from 0 to 50% (0% being the toughest)
RPE_UQV (Upper Quartile Vesting)	% of RPE payout at upper quartile percentile ranking in RPE plans ranging from 50 to 100%
RPE Spread (Target Spread)	Spread is the difference between the median and maximum percentile rankings for vesting to occur

Independent Variables	Definition
Common Risk (Beta)[44]	Absolute value of the coefficient on value-weighted market/industry/supersector returns when regressed on firm-level returns over prior 48 months
Alternate Proxy 1 Common Risk (R-Square)	R^2 of the regression of a firm's stock returns on value-weighted Market/industry/supersector returns over prior 48 months
Alternate Proxy 2 Common Risk (Corr)	Absolute correlation of a firm's stock returns on value-weighted FTSE ICB Market/industry/supersector index returns over prior 48 months
Instit_Own %	The percentage ownership held by the top-four institutional investors
Ind_Directors %	Percentage of number of independent directors over total number of independent directors
Board_Size	Total number of directors on board
Ind_Con	The sum of the squares of the market shares of the firms' sales within each FTSE ICB Industry Classification
MTB	Market value of equity/book market of equity
Div_Yld	Average dividend yield over the prior 3 years
Adj_Ret	Adjusted return is the absolute difference between the firm's annual stock returns and the median annual stock returns
Ln_Sales	Log of total sales
Multiple	1 refers if more than one performance metric is employed and 0 otherwise

[44] Note: All common risk variables are calculated using benchmark returns from the FTSE 350, appropriate industry or supersector index respectively and are indicated by "Market", "Industry", and "Supersector".

Table A.6.1: Robustness Test 1

Multinomial logit model estimating the probability of performance types in compensation contracts (R-square as proxy of common risk)

Multinomial logistic model predicting various performance standards in compensation contracts with common risk (R-square), multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry-adjusted returns, industry concentration, and corporate governance variables. Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%) and *p < 0.1(10%), based on robust standard errors and are reported in parentheses. For simplicity, we do not report results from industry and time dummies. Base Category: Absolute and RPE measure jointly.

Variable	**Model 1**		**Model 2**		**Model 3**	
	Absolute exclusively	**RPE exclusively**	**Absolute exclusively**	**RPE exclusively**	**Absolute exclusively**	**RPE exclusively**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	Market	Market	Industry	Industry	Supersector	Supersector
Common_Risk	-1.601***	2.070***	-1.337***	1.300**	-1.491***	1.290**
	(0.598)	(0.692)	(0.499)	(0.575)	(0.468)	(0.582)
Board_Size	-0.841**	0.172	-0.801*	0.225	-0.731*	0.213
	(0.413)	(0.553)	(0.412)	(0.543)	(0.418)	(0.544)
Ind_Directors %	-0.023**	-0.029***	-0.024**	-0.028***	-0.024**	-0.027**
	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)
Ln_Sales	0.225***	-0.113	0.238***	-0.126	0.250***	-0.144
	(0.065)	(0.090)	(0.066)	(0.092)	(0.067)	(0.095)
Div_Yld	-0.034	0.036	-0.024	0.023	-0.040	0.037
	(0.048)	(0.061)	(0.047)	(0.063)	(0.047)	(0.064)
MTB	-0.014	-0.055**	-0.014	-0.055***	-0.014	-0.053***
	(0.012)	(0.022)	(0.012)	(0.020)	(0.012)	(0.020)
Multiple	-0.650***	-1.224***	-0.661***	-1.162***	-0.647***	-1.181***
	(0.189)	(0.263)	(0.190)	(0.255)	(0.189)	(0.258)
Instit_Own %	-0.005	-0.027**	-0.006	-0.028***	-0.006	-0.025**
	(0.006)	(0.011)	(0.006)	(0.011)	(0.006)	(0.011)
Ind_Con	0.648	-4.205***	0.142	-3.941***	0.649	-4.384***
	(1.137)	(1.251)	(1.105)	(1.275)	(1.105)	(1.227)
Adj_Ret	0.119	0.127	0.095	0.168	0.081	0.196
	(0.241)	(0.299)	(0.238)	(0.289)	(0.235)	(0.294)
Constant	0.398	2.593*	0.210	2.976**	0.179	3.099**
	(1.029)	(1.384)	(1.040)	(1.377)	(1.148)	(1.396)
Industry effects	Yes		Yes		Yes	
Year-specific effects	Yes		Yes		Yes	
Observations	894		894		894	
Log likelihood	-677		-679		-677	
Pseudo R-squared	0.16		0.15		0.15	

Table A.6.2: Robustness Test 2

Multinomial logit model estimating the probability of performance standards in compensation contracts (Correlation as proxy of common risk)

Multinomial logistic model predicting various performance standards in compensation contracts with common risk (correlation), multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry- adjusted returns, industry concentration, and corporate governance variables. Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%) and *p < 0.1(10%), based on robust standard errors and are reported in parentheses. For simplicity, we do not report results from industry and time dummies. Base Category: Absolute and RPE measure jointly.

Variable	Model 1 Absolute exclusively	RPE exclusively	Model 2 Absolute exclusively	RPE exclusively	Model 3 Absolute exclusively	RPE exclusively
	(1)	(2)	(3)	(4)	(5)	(6)
	Market	Market	Industry	Industry	Supersector	Supersector
Common_Risk	-1.605***	1.942***	-1.343***	1.412***	-1.301***	1.232**
	(0.501)	(0.726)	(0.491)	(0.493)	(0.490)	(0.417)
Board_Size	-0.831**	0.201	-0.821*	0.213	-0.823*	0.253
	(0.423)	(0.538)	(0.422)	(0.535)	(0.422)	(0.531)
Ind_Directors %	-0.022**	-0.032***	-0.021**	-0.031***	-0.021**	-0.032***
	(0.008)	(0.011)	(0.008)	(0.011)	(0.008)	(0.011)
Ln_Sales	0.237***	-0.108	0.235***	-0.098	0.236***	-0.084
	(0.07)	(0.079)	(0.070)	(0.079)	(0.07)	(0.079)
Div_Yld	-0.0481	0.023	-0.047	0.026	-0.045	0.027
	(0.043)	(0.058)	(0.043)	(0.058)	(0.043)	(0.057)
MTB	-0.014	-0.047***	-0.013	-0.047***	-0.012	-0.049***
	(0.012)	(0.014)	(0.012)	(0.013)	(0.012)	(0.01)
Multiple	-0.684***	-1.100***	-0.692***	-1.083***	-0.690***	-1.084***
	(0.193)	(0.276)	(0.192)	(0.274)	(0.193)	(0.273)
Instit_Own %	-0.002	-0.028**	-0.002	-0.029***	-0.001	-0.030***
	(0.006)	(0.011)	(0.006)	(0.011)	(0.006)	(0.011)
Ind_Con	0.580	-4.404***	0.608	-4.715***	0.598	-4.884***
	(1.276)	(1.440)	(1.259)	(1.435)	(1.256)	(1.433)
Adj_Ret	0.126	0.195	0.120	0.187	0.125	0.174
	(0.239)	(0.323)	(0.239)	(0.319)	(0.239)	(0.314)
Constant	0.179	2.526*	0.115	2.713*	0.076	2.959**
	(1.148)	(1.508)	(1.145)	(1.499)	(1.142)	(1.488)
Industry effects	Yes		Yes		Yes	
Year-specific effects	Yes		Yes		Yes	
Observations	894		898		894	
Log likelihood	-680		-684		-683	
Pseudo R-squared	0.16		0.15		0.15	

Table A.6.3: Robustness Test 3

Consultant specific effects

Multinomial logistic model predicting various performance standards in compensation contracts with common risk, multiple plans, board size, institutional ownership, independent directors, multiple plans, market to book ratio, industry-adjusted returns, industry concentration, corporate governance variables and consultant dummies. Significance levels are indicated by ***p < 0.01(1%), **p < 0.05(5%) and *p < 0.1(10%), based on robust standard errors and are reported in parentheses. For simplicity, we do not report results from industry and time dummies. Base Category: Absolute and RPE measure jointly.

	Model 1		**Model 2**		**Model 3**	
	Absolute exclusively	**RPE exclusively**	**Absolute exclusively**	**RPE exclusively**	**Absolute exclusively**	**RPE exclusively**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Variable	Market	Market	Industry	Industry	Supersector	Supersector
Common_Risk	-0.578***	0.741***	-0.560**	0.750***	-0.323	0.648**
	(0.203)	(0.190)	(0.225)	(0.265)	(0.218)	(0.256)
Board_Size	-1.240***	0.404	-1.101**	0.446	-1.052**	0.418
	(0.432)	(0.579)	(0.437)	(0.579)	(0.433)	(0.570)
Ind_Directors %	-0.029***	-0.031***	-0.033***	-0.031***	-0.033***	-0.030***
	(0.010)	(0.011)	(0.010)	(0.011)	(0.010)	(0.011)
Ln_Sales	0.159**	-0.042	0.141**	-0.039	0.143**	-0.042
	(0.069)	(0.091)	(0.069)	(0.091)	(0.068)	(0.091)
Div_Yld	-0.022	-0.014	-0.022	-0.028	-0.034	-0.007
	(0.058)	(0.055)	(0.058)	(0.059)	(0.056)	(0.057)
MTB	-0.017	-0.049***	-0.015	-0.053***	-0.014	-0.050***
	(0.014)	(0.017)	(0.013)	(0.017)	(0.013)	(0.017)
Multiple	-0.619***	-1.308***	-0.617***	-1.224***	-0.632***	-1.238***
	(0.200)	(0.254)	(0.199)	(0.244)	(0.201)	(0.243)
Instit_Own %	-0.005	-0.026**	-0.005	-0.028**	-0.004	-0.027**
	(0.006)	(0.011)	(0.006)	(0.011)	(0.006)	(0.011)
Ind_Con	0.618	-4.055***	0.415	-4.471***	0.427	-4.897***
	(1.196)	(1.337)	(1.181)	(1.330)	(1.226)	(1.318)
Adj_Ret	0.254	0.117	0.248	0.093	0.217	0.089
	(0.267)	(0.304)	(0.266)	(0.296)	(0.262)	(0.298)
Advisor						
Deloitte	1.607***	-0.504	1.641***	-0.533	1.612***	-0.557
	(0.262)	(0.405)	(0.262)	(0.407)	(0.260)	(0.404)
Kepler	1.175***	0.241	1.201***	0.199	1.185***	0.213
	(0.314)	(0.322)	(0.308)	(0.319)	(0.309)	(0.316)
Mercer	1.712***	-13.575***	2.121***	-13.498***	2.048***	-13.488***
	(0.611)	(0.581)	(0.675)	(0.600)	(0.675)	(0.601)
"Others"	0.322	0.322	0.397	0.282	0.357	0.276
	(0.389)	(0.406)	(0.374)	(0.403)	(0.372)	(0.400)
PWC	0.148	-1.424**	0.138	-1.460**	0.124	-1.444**
	(0.367)	(0.696)	(0.365)	(0.694)	(0.364)	(0.693)
Towers Watson	0.757**	-0.128	0.756**	-0.206	0.757**	-0.235
	(0.321)	(0.387)	(0.323)	(0.391)	(0.320)	(0.398)
Constant	1.918*	1.549	2.198**	1.506	1.867*	1.689
	(1.068)	(1.470)	(1.102)	(1.475)	(1.083)	(1.477)
Industry Effects	Yes		Yes		Yes	
Observations	894		894		894	
LR chi2	331***		323***		316***	
Log likelihood	-639		-643		-647	
Pseudo R-squared	0.19		0.19		0.19	

7 SUMMARY AND CONCLUSION

This chapter presents a discussion and the concluding remarks for this research. It consists of three sections. Section 7.1 briefly summarizes all the all the chapters of the thesis, also bringing together the empirical results of the studies shown earlier, recognizing the main contribution of this study and presents the implications for policymakers as well as investors. Section 7.2 points out the limitations of the present scope of the study. In the end, Section 7.3 suggests the possible avenues for future empirical enquiry in the area of executive compensation.

7.1 Summary of the Findings

In the recent years, a widespread concern exists about the sustained rise in executive pay that the media, general public, academia, and legislators argue as having been driven by a growing complexity in long-term incentives which deviates from shareholder interests. Presently, the regulatory bodies have led to the transparency in executive compensation packages, which gives us an opportunity to explore these complex long-term incentive plans in this thesis, also questioning whether these compensation contracts are designed optimally. Thus, the aim of this thesis is to extend our knowledge beyond the present understanding of executive compensation schemes prevalent in the UK by analyzing it from various perspectives as discussed below.

Chapter 1 of the thesis introduces motivations and objectives of this study. At a later part in the chapter, we discuss the potential contributions of this study and also outline the structure of the thesis.

Chapter 2 provides a background on the corporate governance regulations in the UK. Then, this chapter provides the structure of executive compensation contracts and the way these elements

of compensation differ from each other. Chapter 3 offers a critical review of the related literature on executive compensation and performance, discussing the choice of performance, and the use of relative performance condition in compensation contracts.

Chapter 4, 5, and 6 provide an empirical work which shed light on the pay for performance relationship using different elements of compensation, the role of performance volatility on the choice of performance measure, and whether these compensation schemes are formed upon the informativeness principle.

Chapter 4 examines the association between compensation and firm performance of CEO and CFO by investigating UK non-financial firms in the FTSE 350 Index over the period 2007 till 2013. One of the main limitations of previous studies on executive compensation is that they consider only few measures of compensation in their analysis and do not employ the realised pay, which is what executives receive based on actual performance. In this regard, we examine the research question by employing four measures of compensation and also takes into account short-term as well as long-term performance. In investigating pay and performance relationship we employ fixed effect regression model to examine the impact of performance on the level of compensation. Our results indicate that there exists a positive association between previous year's total shareholder return and different components of CEO pay except for equity pay. The results are similar in the case of CFO as well. There exists a positive link between all components of CEO pay and long-term-firm performance but coefficient on long-term firm performance is higher in determining the equity pay since equity pay is highly sensitive to firm performance. These results also hold true for CFO but the relationship is not as strong as that for CEO. Further, this chapter analyses the association between pay and long-term performance in different numbers, value and types of long-term incentive plans. The findings show that for

CEOs, companies that operate one, two or three plans in a compensation package, align the interests of CEOs with those of the shareholders. However, for CFOs, the greater the number or amount of LTIPs granted, the higher is the total compensation and realized pay and greater pay-performance responsiveness. The findings suggest that higher grants will encourage greater CFO effort, leading to higher compensation. Lastly, for CEO as well as CFO, adopting performance share plans in the companies' compensation design leads to a greater alignment between manager and shareholders' interests. The pay-performance responsiveness is, therefore, stronger for CEO than that of CFO. This is because the coefficient of TSR for CEO is greater than that of CFO when regressed against their respective compensation levels.

Chapter 5 examines the new dataset for a sample of 3400 plans for 400 UK firms from 2007 to 2015. The first part of the chapter explores the link between the volatility and the choice of performance measure in compensation contracts by taking into account the identity of a compensation consultant and set of industry-specific controls, following earlier studies (e.g. Sloan, 1993; Zakaria, 2012; Li and Wang, 2016) which suggest that firms should not employ volatile performance measure as it reduces the pay-performance sensitivity. More specifically, we analyze the impact of TSR volatility and EPS volatility on the choice of TSR alone, EPS exclusively, neither EPS nor TSR, and the joint selection of TSR and EPS performance categories. We find evidence that the firms with higher volatility prefer to select EPS only and with lower volatility opt for TSR only plans. However, firms with higher TSR volatility select plans with EPS and TSR as a performance metric. We employ different proxies of volatility, for example, basic volatility, cumulative volatility, and industry-adjusted volatility. These findings remain robust to different proxies of volatility and also after controlling for different plan categories in compensation contracts. The second part of Chapter 5 provides richer insights

on the design of compensation contracts. These descriptive statistics show that the initial and maximum performance thresholds targets lie in certain ranges in the absence of any government guidelines, representing a case of mimetic isomorphism. The empirical findings also show that some consultants devise specific performance metrics to their clients which represent a case of normative isomorphism. Additionally, firms use different types of EPS and TSR in their compensation contracts, vesting percentages pertaining to their initial and maximum threshold targets which are, nonetheless, varied. Finally, we perform a unique investigation of how performance measures and performance benchmarks influence target attainability in these contracts. Our findings indicate that some performance metrics make for "softer" targets than others, where "softer" implies both to EPS and TSR benchmarks.

Chapter 6 investigates whether firms facing greater common risk influences the choice of RPE in compensation contracts for 350 FTSE UK firms from 2010 to 2015, following earlier studies (e.g., Carter et al., 2009; Gong et al. 2011). By classifying firms into "RPE only", "absolute only" and "absolute and RPE" categories, we are able to show that common risk has a positive impact on the choice of RPE in compensation contracts. This chapter employs a number of different proxies of common risk, including market/industry/sector beta- when regressed on market/industry/sector returns against firm returns. The primary results remain robust in spite by using r-square and correlation proxies for common risk and are also consistent after controlling for the identity of the compensation consultant. This chapter also pioneers in providing rich and up-to-date description on characteristics of RPE plans such as selection of peer group, the percentage of vesting pertaining to minimum and maximum thresholds by industry. Further, in Chapter 6, we analyze the characteristics of plans with relative performance conditions and investigate an impact of common risk on these characteristics. Our findings

show that common shock influences the characteristics of relative performance evaluation and firms tend to select a tougher performance target in the form of plans with a greater spread and lower percentage of equity vesting at the median or upper quartile percentile ranking. These are in line with the view that firms which face greater common risk tend to employ tougher RPE conditions in compensation contracts. Lastly, we investigate the effect of different RPE characteristics, since there exists the possibility that some of these characteristics are set in a way that executives attain greater equity vesting, which eventually leads to a higher total compensation. These findings indicate that plans which opt for Index peers achieve greater equity vesting in contrast to firms which select custom or sector peers. However, results relating to target spread and percentage of equity vesting at upper quartile relative performance show that softer performance targets are met with greater ease.

Institutional investors and regulatory bodies require CEO performance to be determined by the corporate performance, alongside, having concerns about the effectiveness of LTIPs in the compensation contract. The results in Chapter 4 addresses these concerns by showing, overall, that there exists a positive association between pay and performance for CEOs. The findings further indicate that the granting of greater number of LTIPs provides a stronger pay-performance association and that CEOs get paid for adding shareholder wealth. Furthermore, this relationship strengthens as the value of the LTIP grants become more.

The empirical results from Chapter 5 show that in regard to the choice of performance measure, compensation contracts are designed optimally, as firms choose a performance measure which is less volatile in nature. As the results indicate, relative to Deloitte, none of the other consultants shows a preference for the selection of EPS contingent plans. While HNBS, Kepler and PWC opt for TSR only plans. This indicates that consultants have marked preferences on

the choice of performance measure. Also. the descriptive statistics shown in Section 5.6.2.2 reveal that minimum EPS absolute and real growth in RPI range lie in the range of 2% p.a. to 8% p.a. and 2% p.a. to 6% p.a., respectively. While maximum threshold targets lie in the range of 7% p.a. to 15% p.a. Although, firms are very different and the nature of business model they operate upon is varied. To date, the Association of British Insurers (2004), now known as IVIS, has not set any specific remuneration guidelines on the way these performance targets should be set except that a greater focus has been given on tightening the relationship between pay and performance by setting sliding scale instead of single performance hurdle as a way of ensuring performance targets are stretching. Both the results from consultant choice of performance measure, along with the prevalence of certain performance threshold, offer advice to regulators by setting at least some form of benchmark criteria in performance measures.

The results from the Chapter 6 indicate that firms tend to employ relative measures when they face greater common shocks, in line with the informativeness principle. However, results related to the choice of peer group in compensation contracts are mixed. IVIS guidelines mention very few technical elements in the evaluation of relative performance with TSR based measure; firms should avoid taking spontaneous or lengthy averages in the calculation of the TSR. Further, it only highlights that TSR can be measured against peer group or broad index category.[45] So far, there is no position of regulators on the criteria in which firms select its peers for relative performance evaluation purposes. If manipulation occurs in the selection of peer group, then it would potentially render the RPE usage and tougher performance threshold targets, and lower level of equity vesting percentage meaningless. Thus, we argue that

[45] Andrew Ninian (2016), The Investment Association Principles of Remuneration. https://www.ivis.co.uk/media/12445/Principles-of-Remuneration-2016-Final.pdf [accessed 20 June, 2017].

regulators should provide guidelines in matters related to the selection of peer group, which could emerge from encouraging firms in analysing prior firm performance relative to its chosen peers. Additionally, the returns of peer firms' to be highly correlated with the firm of interest. In a nutshell, the firms should select such peers that are exposed to common shocks and share a similar ability to respond to these shocks. Thus, an inappropriate selection of peers which does not filter common shocks or even the selection of easier threshold targets and their respective vesting percentages give rise to firms' opportunistic behaviour to improve their relative performance of the firm while setting incentive compensation.

In Chapter 4, we find an existence of agency theory in analysing the link between pay and performance in different settings. The findings in Chapters 5 and 6 indicate an existence of optimal contracting theory and informativeness principle/agency theory in the choice of performance measures and the selection of performance standards respectively, in compensation contracts. Optimal theory argues that compensation contracts are to be formed optimally. However, informativeness principle contends that firms should opt for performance measures which truly reflects CEO action and agency theory focuses on closely tying the reward to actual or perceived firm performance. Taken together, our results in Chapter 4 show that there exists a positive association between pay and performance. The empirical evidence from Chapters 5 demonstrates that firms choose less volatility performance measures in compensation contracts. Chapter 6 results show that firms which face greater common shocks tend to employ RPE as a performance standard, these RPE firms select greater spread and a lower percentage of equity vesting when they face greater external shocks. Therefore, these theories can be tied together as the results show the structure of compensation contracts is designed optimally in various settings, which is the main aim of contracting.

7.2 Limitations of the Findings

Similar to any scholarly study, the results obtained from our empirical analysis are subject to some limitations. Therefore, we will discuss some limitations of this work.

In Chapter 4, we examine the impact of performance on the level of compensation by considering different measures of firm performance and components of executive compensation. In determining the magnitude and structure of executive compensation, there exists the possibility that other factors, such as CEO/CFO education and qualifications, as a reflection of boardroom-quality, which are not employed in the current study due to limited data availability, might effect the outcome of results. Despite this, we factor in a range of control variables to account for economic and human determinants, for instance, age and tenure of CEO/CFO etc, in our empirical model which is in line with prior empirical research.

In the empirical section of Chapter 5, we analyse the link between the choice of performance choices measure and the volatility of EPS and TSR in the construction of CEO compensation contracts. In our regression model, we control for the identity of remuneration consultant, plan types, industry, corporate governance variables and firm-specific variables. However, there exists the possibility that other variables such as the composition of the remuneration committee and CEO shareholdings in the company, which are not controlled in the current study due to limited data availability which could potentially influence the choice of EPS and TSR individually as well as jointly in compensation contracts. We consider other financial categories such as cash flow and NPV in our empirical analysis. One limitation is that we do not include non-financial KPI measures in our empirical model since there exist very few firms that employ KPIs in their equity plans. This could be studied in the future when a greater percentage of firms

will start employing KPIs in their LTIPs to analyse whether their inclusion influences the association between volatility and choice of the performance measure.

The third empirical study in Chapter 6 also focuses on RPE characteristics. These characteristics of relative based plans may be interlinked with each other, for e.g. if firms lower their vesting percentage after achieving median percentile performance, they may possibly even lower their vesting percentage at upper quartile percentile performance, when devising long-term incentive plans. Hence, future research may use the adequate instruments and estimate a series of simultaneous equations with several RPE choices as dependent variables, examining the influence of common risk on these performance threshold targets and their corresponding vesting percentage, as set by the respective firms.

In all of our three empirical chapters, we also employ several governance proxies, such as board size, non-executive directors and percentage of institutional ownership in various executive compensation settings. The collection of data on networks of non- executive directors, such as number of boards they serve and how their network could reflect their role in this firm is a time-consuming process as it would have to be hand-collected, thus, potentially posing a limitation on our findings. For future research, we may examine the characteristics of non-executive directors and their networks with other companies which could potentially influence the level of compensation and the design of the compensation contracts.

7.3 Suggestions for Future Research

Inevitably, there exists limitation that could be addressed in the future with further empirical research.

In Chapter 4, we study pay-performance responsiveness for FTSE 350 UK non-financial firms. Much time has been spent on analysing annual reports to check how many LTIPs are active and the granted value of these LTIPs which are awarded three-years prior to them being vested. Nonetheless, we would like to explore the incentive mechanisms and how strongly they are related with medium and small-sized firms. A greater complexity in the design of compensation structure and change in market and regulations also means that it is worthwhile to revisit this analysis at a later point to investigate whether the documented relationships have changed. These results would not only be of interest to academics but also provide information to policymakers as to whether a greater number of LTIPs or complex schemes strengthen the relationship between pay and performance. Moreover, this would shed light on corporate governance mechanisms and whether they might even have the potential to improve the design of executive compensation packages.

The results of the descriptive statistics from the second part of Chapter 5 indicate that broadly speaking, some performance metrics make for "softer" targets than others. It stimulates further research on what may lead firms to select EPS growth criteria in their long-term incentive plans. Some studies offer empirical evidence on this issue. For instance, Kim and Yang (2010) investigate the influence of corporate governance variables on several characteristics of annual incentive plans for US firms. These annual incentive plans include selection of EPS target and pay-performance sensitivity. They do not find evidence that corporate governance mechanisms impact the EPS target. Their descriptive statistics also reveal that EPS targets are set lower than

projected by analyst consensus. We would like to extend these studies and focus on whether previous year's actual firm EPS, Institutional Brokers' Estimate System (I/B/E/S) EPS forecasts, historical actual growth of peer firms in the same sector and corporate governance variables impact the target setting of EPS growth figure for the next year. The limitation of data access to analysts' forecast of EPS restricts us from investigating the research questions at this stage, but we may examine these in the near future.

In Section 6.4, the descriptive statistics reveal that firms vary in their selection of peers in order to evaluate the relative performance of the firm. We analyze the impact of market, industry and supersector betas on the selection of industry, sector and custom peer group categories in firms who employ RPE conditions in Section 6.6.3. As well as looking at these categories, it is worth exploring in more detail the individual set of firms within these categories. Therefore, we suggest that future research should analyse the determinants of an individual set of firms who are selected or not selected for relative performance evaluation purposes from within broad market index, custom, and sector peer group categories. To measure the common risk of potential peers with RPE firm of interest, we would capture similarities between the index membership and industry membership. Along with this, the correlation in stock returns, difference in beta, and difference in market capitalization between a potential peer and the RPE firm of interest could also be investigated. This would shed light on the factors which lead RPE firms to select peer firms in their RPE pool, relative to other candidate firms which are not selected in RPE pool. This would indicate whether there exists efficient contracting or managerial self -serving bias in the selection of peer group.

Sections 3.3.3 and 6.1.1 review some previous studies using the implicit method by utilizing market and/or industry performance to capture peer performance to analyze pay and firm

performance relationship and pay and peer performance relationship (Gibbons and Murphy, 1990; Janakiraman et al., 1992). The results from these studies are mixed and inconclusive. Later studies have employed peer group performance by matching peers using median stock return in the same size quartile and similar industry (e.g. Albuquerque, 2009). Employing industry or market peer performance may erroneously effect such studies' results as not all firms select industry or market indices as their actual peer group to evaluate relative performance. Unlike the studies stated above, we employ our current dataset of actual peer group to capture peer performance instead of assuming market/industry as potential peer for all RPE firms. For this, we would regress executive pay on the firm performance and executive pay on actual peer group performance broad market index, custom, and sector peer group categories, indicating whether incorporating explicit details of actual peer performance enhances the power of the implicit test to detect RPE use. Additionally, we may compare these results without incorporating explicit RPE details by using combinations of industry and similar size matched peers and examine whether these results change by analyzing the full sample of combination of RPE and non-RPE firms in one sample. Lastly, we would like to extend by running regression models on separate sub-samples for RPE and non-RPE firms. This may indicate whether the RPE detection using explicit approach provides a similar evidence on applying an implicit approach as well. Additionally, the results from separate samples may point out, if in comparison to non-RPE firms, RPE firms filter out market-wide performance from executive compensation. If these results hold true, they would be consistent with the agency theory.

Presently, standard LTIPs are three-year plans which are evaluated and awarded after analysing the firm performance of three years. However, the new code is up for consultation which

suggests that LTIPs should be five to seven years.[46] Three-year LTIPs can be a small period to evaluate the true performance of the company, especially, if executives have just recently joined the company or implemented major policy changes within the organization. With the suggestion of longer LTIPs of five to seven years will keep executives to wait for an additional two to four years. With so much criticism on a standard LTIP model that they are ineffective, it is worth opting for longer LTIPs to see if they can better align executive pay with long-term performance. It could also possibly retain executives for a long-time period as well as keep vested interested in the company and executives can focus on enhancing the share price of the company which would eventually increase their wealth and that of shareholders. However, it is difficult to know the true effectiveness of these LTIPs unless they are put into practice.

[46] Charlotte Fleck (20*17), Putting a lid on the LTIP jar, Governance and Compliance.* https://www.icsa.org.uk/knowledge/governance-and-compliance/features/ltip-long-term-incentive-plan-executive-pay
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