

RARE BOOKS LIB.



Does Performance Pay?
**An Economic and Structural Analysis of CEO Cash Reward and Firm
Performance in Australian Public Companies**

ALESSANDRA CAPEZIO

**A thesis submitted in partial fulfilment of the requirements for the degree of
Doctor of Philosophy
August, 2008**

**Discipline of Work and Organisational Studies
Faculty of Economics and Business
University of Sydney**

I dedicate this thesis to the memory of my dear friend and mentor, Helmut Kaltenthaler.

Statement of Originality

I certify that the intellectual content of this thesis is the product of my own work. All sources consulted in preparing the thesis have been acknowledged, as has all assistance received in its preparation. This thesis has not been submitted for any degree or other purposes.

Alessandra Capezio

Does Performance Pay?

An Economic and Structural Analysis of CEO Cash Reward and Firm Performance in Australian Public Companies

Abstract

The relationship between Chief Executive Officer (CEO) reward and corporate performance has been widely investigated in recent years. The determinants and moderators of this relationship have also been examined extensively. However, despite the now vast body of research in this area, the evidence on the association between CEO reward and firm performance remains inconsistent and inconclusive. To this end, this thesis empirically tests and critically analyses structural and economic models of CEO cash reward determination, encompassing the effects of firm, ownership, and board structural characteristics, using a system generalised method of moments (GMM) approach to estimation. Using aggregate time-series analysis on an open cohort of firms included in the Standard and Poor's (S&P)/Australian Securities Exchange (ASX) 500 list over the period 1999 to 2006 inclusive, the thesis presents a number of important findings with wide-ranging implications for research, corporate governance policy, and practice.

First, using a system GMM approach to estimation, the study finds that there is no lagged or contemporaneous association between CEO total cash reward, and various measures of firm-level performance. Even more compelling is the finding that the reported performance-based CEO cash reward is insensitive to firm-level performance measures purportedly used by boards to determine these outcomes.

Second, the study finds that board structural characteristics – most notably, board 'independence' – do not directly influence the level of CEO cash reward, nor do they positively moderate the relationship between CEO cash reward and performance. The study identifies two main theoretical perspectives on CEO reward and performance: Agency Theory and the Managerial Power perspective. The Agency Theory perspective assumes that boards make rational and economic choices and decisions that align CEO reward to firm-level performance. The Managerial Power perspective assumes that socio-political forces and the distribution of power between the board and the CEO influence the way the board manages the CEO reward-performance relationship. Both Agency Theory and Managerial Power

Theory identify various corporate governance structures and institutions as solutions to CEO excess. Common to both perspectives is the assumption that board structural characteristics and configurations are critical, intervening variables in the effective management of CEO reward and performance. Board structural characteristics that are said to be associated with director 'independence' are assumed to limit managerial discretion and thus to constrain managerial opportunism and sub-optimal/excessive reward levels - or 'rent extraction', to use the preferred Managerial Power terminology. While this institutional presupposition has become the edifice of corporate governance codes of best practice within, and beyond Australia in recent times, it is a premise that remains empirically untested, certainly in the Australian context. The results presented in this thesis suggest that these structures have had no impact on the level and performance sensitivity of CEO cash reward in Australia over the period 1999 to 2006. Consistent with prior research, firm size, firm total risk, and ownership concentration are found to directly influence CEO cash reward levels, rather than to positively moderate the relationship between CEO cash and performance.

Finally, this thesis has important methodological implications for research investigating the longitudinal sensitivity between CEO reward and performance. This thesis demonstrates and critically assesses the potential sources of contamination associated with using a fixed effects OLS approach to dynamic panel model estimation. The study show's that in overlooking the potential for endogeneity, higher-order autocorrelation, and dynamic misspecification, existing research in this area, has limited inferential validity.

These findings hold considerable significance for both governance theory and regulatory practice. While theory and best practice prescriptions have continued to centre on board structural characteristics - most notably, board independence - as predictors of board monitoring and decisional effectiveness, there is no evidence that these prescriptions have led to CEO cash rewards becoming more performance-contingent. In essence, the widely embraced assumption that boards exhibiting greater structural independence may be more effective 'stewards' of owner interests may be 'too good to be true'. Finally this thesis questions whether Australian boards use CEO cash rewards efficiently as an additional performance incentive mechanism to equity-based long-term incentives.

Acknowledgments

I would like to first thank two people who have been incredibly influential and inspirational in my life and academic career. I am extremely grateful to my late friend and mentor, Helmut Kaltenthaler, who encouraged me to undertake this degree. He said that 'it would open more doors than you can imagine'. He was right. I am incredibly grateful to John Shields for being an amazing mentor and role model, and especially for inviting me to undertake this degree. J

I am also thankful to the Australian Research Council for providing the funding that made this study possible, and to the Faculty of Economics and Business at the University of Sydney for welcoming me into its research community during my studies as an both an undergraduate and a postgraduate.

I want to thank my mum and dad, and my darling Bede for their unceasing support and love, and especially Bede for his patience.

Several people made an important contribution to this thesis in the advice and guidance they have provided. In this respect, I am especially grateful to Des Nichols, Michael O'Donnell, Bari Hall, my BFF Kym Musgrove, Adam Lockyer, Jonathan Paul, Anastasios Panagiotelis, Astghik Mavisakalyan, Elisabeth Huynh, Abhishek Das, Sungyoung Kim, and Giang Truong.

TABLE OF CONTENTS

Abstract	i
Acknowledgements	iii
Table of Contents	vi
List of Exhibits	vii
List Abbreviations	ix
Chapter 1 Introduction	1
1.1 Introduction	1
1.2 Overview of Thesis Structure and Findings	6
1.3 Conclusion	10
Chapter 2 Theoretical Perspectives on CEO Reward and Performance: Insights and Oversights	12
2.1 Introduction	12
2.2 Agency Theory	12
2.3 Managerial Power Model: An Alternative Framework or Extension to Agency Theory?	22
2.4 Synthesising Agency Theory and the Managerial Power Approach	29
2.5 Conclusion	32
Chapter 3 Existing Evidence on CEO Reward and Performance	34
3.1 Introduction	34
3.2 The Empirical Treatment of Agency Theory	34
3.3 Reward-for-Performance and Reward-without-Performance: The Evidence	36
3.4 Determinants and Boundary Conditions of the CEO Reward and Performance Relationship	40
3.4.1 Firm-specific Factors	41
3.4.2 CEO Demographic Factors	46
3.4.3 Corporate Governance Regulation and Board Governance	48
3.4.4 External Ownership	55
3.5 Conclusion	56
Chapter 4 An Hypothesised Economic and Structural Model of CEO Reward and Performance	59
4.1 Introduction	59
4.2 Integrating Extant Theory	60
4.3 An Hypothesised Economic and Structural Model of CEO Reward and Performance	63
4.4 Determinants of CEO Reward and Performance	64
4.4.1 Firm Characteristics and CEO Cash Reward	64
4.4.2 Ownership and CEO Cash Reward	68
4.4.3 Board Characteristics and CEO Cash Reward, Corporate Governance	70
4.5 Conclusion	77
Chapter 5 Research Method and Model Specification and Estimation	78
5.1 Introduction	78

5.2	Research Method	78
5.3	Data and Sample	79
5.4	Variables	81
	5.4.1 CEO Reward	81
	5.4.2 Performance	84
	5.4.3 Size and Risk	85
	5.4.4 CEO Ownership	86
	5.4.5 External Ownership	87
	5.4.6 Board Governance	87
5.5	Model Specification	88
5.6	Parameter Estimation	92
5.7	Multivariate Regression Analysis	97
5.8	Conclusion	99
Chapter 6	CEO Cash Reward and Performance in Australia: A System GMM Dynamic Panel Analysis	100
6.1	Introduction	100
6.2	Hypotheses	101
6.3	An Alternative Empirical Model of CEO Reward and Performance Sensitivity	102
6.4	Descriptive Results	104
6.5	Inferential Results	106
6.6	Discussion	119
6.7	Conclusion	126
Chapter 7	Firm Size and Risk as Moderators of CEO Reward and Performance	128
7.1	Introduction	128
7.2	The Role of Size and Risk: Evidence and Hypotheses	128
7.3	The Econometric Model and Estimators	132
7.4	Results	133
7.5	Discussion	139
7.6	Conclusion	141
Chapter 8	CEO Ownership as a Moderator of CEO Cash Reward and Performance	143
8.1	Introduction	143
8.2	CEO Equity Ownership: Theory, Evidence, and Hypotheses	143
8.3	The Econometric Model and Estimator	147
8.4	Results	148
8.5	Discussion	152
8.6	Conclusion	153
Chapter 9	External Ownership Concentration as a Moderator of CEO Cash Reward and Performance	155
9.1	Introduction	155
9.2	External Ownership Concentration: Theory, Evidence, and Hypotheses	155
9.3	The Econometric Model	157
9.4	Results	158
9.5	Discussion	162

9.6	Conclusion	164
Chapter 10	Board Governance as a Moderators of CEO Cash Reward and Performance	165
10.1	Introduction	165
10.2	Board 'Independence' and CEO Reward: Theory, Evidence, and Hypotheses	166
10.3	The Econometric Model	176
10.4	Results	178
10.5	Discussion	198
10.6	Conclusion	201
Chapter 11	General Conclusion	203
11.1	Introduction	203
11.2	Reprising Research Purpose and Approach	204
11.3	Key Findings	206
11.4	Empirical and Theoretical Significance	208
11.5	Limitations	216
11.6	Areas for Further Research	217
11.7	Conclusion	225
	References	228

LIST OF EXHIBITS

2.1	Strength of Reward-Performance Sensitivities	19
2.2	An Integrated Approach to the Agency Relationship	31
4.1	An Integrative Model of the Mechanisms to Align the Interests of Shareholders and Agents	62
4.2	An Hypothesised Economic and Structural Model of CEO Cash Reward and Performance	65
6.1	Measures and Variables	104
6.2	Nominal \$AU Annual Means for CEO Salary, Annual Cash Incentive, Total Non-cash Incentive (TNIC), and Total Cash Reward	105
6.3	Annual Means for CEO Shareholdings, Shareholdings as a Percentage of Total Shares Outstanding, and Volume of CEO Options and Share Rights	105
6.4	Means and Standard Deviations for Firm and CEO-level Variables	106
6.5	Pearson's Bivariate Correlations	107
6.6	Fixed Effects, IV, and System GMM Estimates of the CEO Total Cash Reward-Performance Sensitivity	108
6.7	First Stage Results for CEO Total Cash Reward	113
6.8	Fixed Effects, IV, and System GMM Estimates of the CEO Annual Cash Reward-Performance Sensitivity	115
6.9	First Stage Results for CEO Annual Incentive Cash Reward	118
7.1	Variables and Measures	133
7.2	Pearson's Bivariate Correlations between all Modelled Variables	135
7.3	The Influence of Firm Size on CEO Cash Reward, with Real Annual Stock Returns	136
7.4	The Influence of Firm Risk on CEO Cash Reward, with ROE	138
8.1	Variables and Measures	148
8.2	The Influence of CEO Share Ownership on CEO Cash Reward	149
8.3	The Influence of CEO Stock Option and/or Share Rights Plan Participation On CEO Cash Reward	151
9.1	Variables and Measures	158
9.2	The Influence of Top Shareholder Ownership Concentration on CEO Cash Reward	160
9.3	The Influence of Ownership Concentration Among Top 20 Shareholders on CEO Cash Reward	161
10.1	Annual Means of Board Governance Measures	179
10.2	Pearson's Bivariate Correlations	180
10.3	The Influence of Board Chair Independence of CEO Cash Reward, with Real Annual Stock Returns	182
10.4	The Influence of Board Chair Independence on CEO Cash Reward, with ROE	183
10.5	The Influence of Board Independence on CEO Cash Reward, with Real Annual Stock Returns	185
10.6	The Influence of Board Independence on CEO Cash Reward, with ROE	186

10.7	The Influence of Non-Executive Director Shareholders on CEO Cash Reward, with Real Annual Stock Returns	188
10.8	The Influence of Non-Executive Director Shareholders on CEO Cash Reward, with ROE	189
10.9	The Influence of Non-executive Dominated Remuneration Committees on CEO Cash Reward, with Real Annual Stock Returns	191
10.10	The Influence of Non-executive Dominated Remuneration Committees on CEO Cash Reward, with ROE	193
10.11	The Influence of Non-executive Dominated Nomination Committees on CEO Cash Reward, with Real Annual Stock Returns	195
10.12	The Influence of Non-executive Dominated Nomination Committees on CEO Cash Reward, with ROE	196
11.1	An Integrative Process-oriented Model of CEO Cash Reward and Performance	222

LIST OF ABBREVIATIONS

ACSI	Australian Council of Superannuation Investors
ASX	Australian Stock Exchange
CEO	Chief Executive Officer
CLERP9	Corporate Law Economic Reform Program Paper No. 9
CPI	Consumer Price Index
FE	Fixed Effects Estimator
GICS	Global Industry Classification Standard
GMM	Generalised Method of Moments
IV	Instrumental Variables Estimator
LTIP	Long-term Incentive Plan
MD	Managing Director
OLS	Ordinary Least Squares
ROA	Return on Assets
ROE	Return on Equity
ROIC	Return on Invested Capital
S&P	Standard and Poor's
STI	Short Term Incentive
TSR	Total Shareholder Return
2SLS	Two stage least squares
USA	United States of America
UK	United Kingdom

Chapter One

Introduction

1.1 Thesis Aims and Approach

Chief Executive Officer (CEO) reward and performance have traditionally been theorised and researched within the Agency Theory paradigm. Agency Theory suggests that the separation of ownership and control of the firm precipitates goal conflict between appointed manager-agents, and the principals of the firm (Jensen and Meckling, 1976). Agency Theory reinforces the importance of executive incentive contracts - or executive reward for performance - as the primary mechanism to protect the firm against managerial opportunism and effort and risk aversion (Jensen and Meckling, 1976). From this perspective, it follows that the greater the sensitivity of executive rewards to firm performance, the stronger the alignment between owner/principal and executive/agent interests (Fama, 1980).

Further, Agency Theory posits that dispersed principals delegate the responsibility to manage the potential for goal conflict to the board of directors. Thus, the board is the apex decision-making in the firm (Fama and Jensen, 1983; Jensen and Meckling, 1976), and is authorised to hire, fire, motivate, control and reward the CEO and other top executives. Agency Theory casts the board of directors as stewards of dispersed owners; charged with task of managing CEO reward and performance in ways that optimise owner interests.

Contrary to the Agency Theory perspective, some authors suggest that executive reward and incentive contracts may exacerbate rather than ameliorate goal conflict; that is, that board attitudes to executive reward determination may actually be part of the governance problem rather than the solution (Bebchuk and Fried, 2004). Thus the Managerial Power perspective explains escalating levels of CEO total reward, and the observed decoupling of reward from measures of firm-level performance, in terms of power dynamics between the board and the incumbent CEO. Bebchuk and Fried, (2004) suggest that CEO reward is an outcome of CEO power, which, by implication, constrains board rational choice in the management of CEO reward and performance.

While the two theoretical perspectives at first glance offer contrasting explanations of the relationship between CEO reward and performance, there is a critical commonality that has

hitherto been largely overlooked. Upon closer examination, the two theoretical perspectives are complementary in their advocacy of *structural* reforms to enhance the board's effectiveness in managing CEO reward and performance. Eminent Agency Theorists Fama and Jensen (1983), along with Eisenhardt (1989), make the implicit assumption that board structural arrangements determine the board's effectiveness in managing and controlling the relationship between CEO reward and corporate performance. They suggest that 'outside' directors are in a better position to exercise independent judgement when appraising CEO performance (see also Fama, 1980). Similarly, the Managerial Power perspective suggests that exorbitant and performance-decoupled CEO rewards are attributable to poor board governance regulation and policy and board structural configurations. This institutional-structural logic represents a point of convergence between these two major theoretical perspectives.

The tenets of Agency Theory have precipitated an abundance of research examining the sensitivity of top executive reward to measures of firm-level performance. Yet there is still no conclusive evidence to suggest that stronger alignment between CEO or top executive reward and firm-level performance has as yet materialised. There is however, consistent evidence that CEO rewards continue to outpace growth in employee wage and salary earnings (Shields, 2005), and that across the developed world the level of CEO reward continues to escalate, driven primarily by the proliferation of executive stock options (Conyon and Murphy, 2000; Jensen, Wruck and Murphy, 2004). It is worth noting that the cash component of CEO total reward continues to increase (see Shields, 2005).

At the same time, recent years have seen the advent of corporate governance codes of best practice intended to improve board monitoring and decisional processes through specific board structural arrangements, especially in critical areas such as executive incentive contracts. Corporate governance codes of best practice in Australia (as elsewhere) are predicated on the assumption that board structural characteristics and configurations enhance the board's ability to monitor and reward the CEO effectively. These interventions have involved greater mandatory disclosure of executive reward, increased pressure on boards to make executive reward more performance contingent, and board governance structures purported to enhance the board management of executive rewards. The institutional presuppositions, which are shared by both major theoretical perspectives outlined above, have become the edifice of corporate governance codes of best practice within and beyond

Australia in recent times. Accordingly, it is reasonable to expect that in the context of this corporate reform agenda, Australian boards would have become more efficient and effective in managing CEO reward and performance.

Growth in CEO reward continues to attract considerable attention from the media, as well as outraged shareholder associations. This interest has also precipitated a deluge of empirical research examining the sensitivity between CEO reward and performance, which has produced ambiguous findings. The purpose of this thesis is to empirically test and critically evaluate the various corporate governance practices and institutions identified by both Agency Theory and the Managerial Power literatures as potential solutions to CEO reward 'excess'. Corporate governance 'best practice' discourse continues to promulgate an essentially untested and un-interrogated causal logic, emanating from both the Agency Theory and Managerial Power. To this end, one of the primary aims of this thesis is to empirically test and critically analyse the institutional presupposition that board *structural* arrangements improve the management of the relationship between CEO reward and performance. To facilitate these research objectives, this thesis investigates longitudinally various structural and economic determinants of CEO reward identified in extant theory and research. Specifically, the thesis tests the main and moderating effects of three categories of determinants of CEO cash reward determination. The first category is firm characteristics, the second is ownership characteristics, and the third and final category is board structural characteristics.

An additional aim of the thesis is to use a more sophisticated approach to estimating the relationship between CEO reward and performance; an approach that has been little used in the extant empirical literature. This study contends that the inconsistencies in the empirical research examining the relationship between CEO reward and performance are in part methodologically driven. In their review of studies on executive reward, Devers, Canella, Reilly, and Yoder (2007) note the prevailing inconsistencies in the empirical specification of the executive reward and performance relationship, particularly the variation in the specification of covariates, and measures of performance and reward. An examination of the executive reward for performance literature indicates methodological isomorphism with respects to parameter estimation and a strong predilection for fixed effects estimators. This latter approach, however, attenuates the validity of causal inference especially when used in relation to dynamic panel data (see Sayrs, 1989). Recent Australian studies examining the

relationship between CEO reward and performance have also employed this approach. Merhebi *et al.*, (2006) report a statistically significant relationship between CEO total cash reward and both market and accounting return measures of company performance. However such findings should be regarded with caution given that the estimates that they report fail to account for the dynamic and complex error structure of the empirical model used. The forthcoming chapters provide a further explication of these shortcomings. For our purposes, it is important to recognise that errors in estimation lead invariably to errors in inference. Therefore, in using a system Generalised Method of Moments (GMM) approach to parameter estimation alongside a commonly used fixed effects OLS approach, this thesis makes an important contribution by investigating the relative efficiency of a system GMM approach to estimation. With these general points in mind, this thesis provides a detailed critical review of the literature on executive reward and performance with a view to identify associated methodological and theoretical problems. As a more rigorous and sophisticated approach to parameter estimation, the system GMM stands to buttress the validity of causal inference in research examining the relationship between executive reward and performance.

Finally, after demonstrating the relative efficiency of the system GMM approach to dynamic panel estimation, and empirically testing and critically evaluating the structural determinism and institutional logic implicit in extant theory, the thesis concludes by proposing a new avenue for future theory and research. In doing so, the study offers some speculative explanations for the growth and performance insensitivity of CEO cash reward and that have potential in terms of shifting the locus of enquiry to the role of board decisional processes and capabilities.

It is important, at the outset, to explain why this thesis is localised to an analysis of CEO cash reward component of CEO total reward, even though the value of equity-based reward has been instrumental in driving increases in CEO total reward in recent times. Unlike researchers in the USA and UK, those working with Australian data do not have reliable and consistent time-series data on the value of new annual executive stock option grants¹.

¹ E-databases such as Compustat's Execucomp, OneBanker, and Datastream provide consistent valuations of grant-date value share option and equity-based long-term incentive plans. This study has used the volume rather than the grant-date value of stock option and or share rights grants for two reasons. The first is that only recently have Australian companies been required to disclose the fair value of new stock option and other equity-based long term incentive plans following the enactment of the *Corporate Law Economic Reform Program (Audit Reform and Corporate Disclosure) Act 2004*. The second reason is that a survey of the

Before 2004, legislative disclosure requirements did not require companies to reveal the value of equity based long-term incentive plans. Since the enactment of CLERP9 in the *Corporate Law Economic Reform Program (Audit Reform and Corporate Disclosure) Act 2004*, which amended the disclosure requirements in the *Corporations Act 2001* (Cth), publicly listed companies have been legally required to report on such plans (see s. 300A(1)(e)). As such, Australian researchers face a significant challenge in not having access to reliable large sample time-series estimates of CEO total reward before 2004. Even after this time, the reporting of the values of these equity based incentive plans is not methodologically consistent from company to company.

Nevertheless, it is reasonable to expect CEO cash reward - which remains a significant proportion of total CEO reward - to co-vary with market and non-market firm-level performance criteria. This assumption is justified because since 1998 the Australian *Corporations Law* required publicly listed companies to comment on the linkages between executive remuneration and company performance (see s. 300A(1)(b) of Schedule 1 of the *Company Law Review Act 1998* (Cth), now found in the same section of the *Corporations Act 2001*).

From an Agency Theory perspective executive cash reward for performance is a necessary requirement in managing 'moral hazard', irrespective of CEO-agent ownership and stock options (Aggarwal and Samwick, 1999a). Thus, while it is important to recognise the escalation in equity-based executive incentives, it is equally important to acknowledge that incentive plans that focus on short-term performance remain largely cash-based. More importantly still, rewards flowing from short-term cash incentive plans should, by definition, be more directly amenable to board determination and review than are rewards arising from long-term equity-based incentive plans. As such, in the absence of reliable time series data on total reward levels, it is appropriate that this study of the Australian experience should focus on reported cash reward and its main constituents, including cash incentives. However, the study by no means overlooks the importance of equity-related reward, with CEO equity holdings being modelled as a lagged moderator of the cash reward-performance relationship.

valuation techniques used by Australian companies reveals inconsistencies in the methods used to arrive at these valuations (see Shields, 2005).

The study thus represents a critical departure from the existing theorisations of CEO reward and performance that cast board structural characteristics as critical indicators of board monitoring and task performance effectiveness. It also advances knowledge and research on CEO reward and performance by promoting a more efficient approach to the parameter estimation of CEO cash reward and performance relationship. It is hoped that these conceptual and methodological advancements will enable the formulation of other structural models encapsulating the decision processes governing other components of CEO total reward, particularly equity-based rewards.

1.2 Overview of Thesis Structure and Findings

The thesis comprises 11 chapters that, in combination, seek to systematically advance the theoretical specification, empirical specification, and parameter estimation of the CEO cash reward and performance relationship in the Australian context.

Chapter Two provides a critical overview of the theoretical literature on CEO reward and performance. Much of this literature is grounded within either Agency Theory or Managerial Power postulates. Agency Theory provides an economic model of CEO reward determination, whereas the Managerial Power literature provides a socio-political explanatory model of CEO reward determination. Despite these differences, both bodies of literature advanced essentially the same institutional solutions to perceived CEO reward excess. This chapter provides a much needed critique of the institutional presuppositions underpinning these prescriptions.

Chapter Three surveys the empirical research examining the relationship between CEO reward and performance, on the one hand, and the factors that may moderate this relationship, on the other. In essence, it suggests that the extant empirical evidence is inconsistent and contradictory and that there has been surprisingly little attempt to reconcile these inconsistencies. Rather, the entire issue has been mired in a highly normative debate about the appropriateness, or otherwise, of executive reward level and composition. Chapter Three offers a critique of both sides of this conceptual divide.

Chapter Four presents and explicates an hypothesised structural and economic model of CEO cash reward determination developed for the purpose of empirically testing the causal logic and institutional presuppositions underpinning extant theory on CEO reward

determination. This model integrates firm, ownership, and board structural characteristics identified in both Agency Theory and Managerial Power literatures as influencing CEO reward determination. Firm characteristics include accounting and market-return performance, firm size, and total firm risk. Ownership characteristics include the concentration of issued capital held by the top shareholder, top20 shareholders, and the CEO. Board structural characteristics include the presence of a nomination and remuneration committee, the presence of the CEO on these board sub-committees, the percentage non-executive directors on the board, and the presence of a non-executive chairperson on the board. This chapter thus proposes a broader causal system encapsulating the main and moderating effects of research-driven structural and economic factors including firm size, firm total risk, executive ownership, and ownership concentration.

Chapter Five describes the sample, data, and research methods used to examine CEO cash reward and performance, and hypothesised determinants, using an open cohort of firms included in the Standard & Poor's/Australian Securities Exchange (S&P/ASX) 500 list over the period 1999-2006, inclusive. Building on the discussions advanced in Chapter Four, this chapter presents an alternative approach to both the empirical specification and parameter estimation of the CEO cash reward and performance relationship. It argues that the predominant approach to model specification oversimplifies the determination of CEO reward. It also claims that the dominant approach to parameter estimation - a fixed effects approach - does not adequately ameliorate the nature and structure of the disturbance term of a dynamic panel model. The chapter makes a case for applying a multi-equation system GMM approach to ameliorate common sources of contamination in fixed effects estimates. It concludes that the generalisability of published research based on fixed effects estimates is highly problematic; recent research in the Australian context being no exception.

Chapter Six reports both descriptive and inferential results from analyses examining the relationship between CEO cash reward and performance. The annual descriptive results indicate an increasing trend over the period 1999 to 2006 in CEO total cash rewards. They also demonstrate that the CEOs sampled enjoyed concomitant increases in both the level of CEO fixed cash rewards and reported performance-based CEO cash rewards. Inferential multivariate regression results reveal that CEO cash reward measures are unrelated to separate and composite measures of firm-level performance. These results also indicate that CEO reward for performance estimates were not robust across different approaches to

parameter estimation. Fixed effects OLS estimates of the association between CEO cash reward and performance are significant in some model specifications and non-significant in others. These significant effects disappear when a system GMM approach to estimation is espoused. These inconsistencies lend credence to the charge that much of the research examining the association between CEO reward and performance may be methodologically flawed. Further, specification tests identify that a multi-equation approach to parameter estimation is a more efficient approach to examining CEO reward and performance relationships.

Chapter Seven examines the relationships between other firm characteristics and CEO cash reward. Consistent with the extant empirical literature, Chapter Seven investigates whether firm size and total firm risk as being important *foci* or bases of board deliberations on CEO cash reward level and composition. The moderator effects of firm size and firm risk on the relationship between these CEO cash reward outcomes and measures of firm-level performance are also analysed. Contrary to expectations, and irrespective of the performance measures used, it finds that there are no significant moderator effects. However, firm size has a robust positive effect on both the level of CEO total cash reward and the level of CEO reported performance-based reward.

According to extant theory CEO share ownership may be an important consideration in board deliberations pertaining to CEO cash reward, especially when balancing CEO-agent incentives and risk (Lambert and Larcker, 1987). Thus, Chapter Eight examines the main and moderating effect of lagged executive share ownership and participation in other equity-based long-term incentive plans, on the relationship between CEO cash reward and performance. Assuming that boards make strategic choices when determining the level and performance-contingency of CEO cash reward, the chapter predicts that ownership will negatively moderate the relationship between CEO cash reward and performance in general. A subsidiary prediction, made on the basis of Lambert and Larcker's (1987) insights, is that CEO ownership will have a more salient, positive, moderating effect on the relationship between CEO cash reward and accounting measures of firm-level performance. Contrary to prediction, lagged CEO stock option and share rights holdings do not appear to significantly moderate this relationship. Against expectations, CEO share ownership does not influence the level of reported performance based reward. However, this finding should be interpreted with circumspection, especially in view of the finding that reported CEO performance-based

cash reward are unrelated to measures commonly used by the board to determine CEO cash reward.

Chapter Nine examines the main and moderator effects of another type of ownership - external ownership - on CEO cash reward and performance. Ownership concentration among the top shareholder and the top 20 shareholders, operationalised as a continuous variable, is expected to positively moderate the relationship between CEO cash reward and measures of firm-level performance. The empirical results indicate that, consistent with this prediction, the percentage of company shares held by the largest shareholder, significantly and positively moderates the relationship between CEO total cash reward and market-return performance. Results also indicate that as ownership concentration among top 20 shareholders increases, the total level of CEO total cash reward significantly decreases.

A number of interventions targeting board governance practice and structural characteristics have been increasingly promulgated in corporate governance codes of best practice. In terms of their implications for the management and control of CEO cash reward and performance, such codes are said to allow boards to buttress the alignment between CEO and executive reward and firm-level performance. In addition, boards have been required to establish task specific remuneration and nomination committees dominated by 'independent' directors (see ASX Corporate Governance Council, 2003). According to proponents - and consistent with the tenets of Agency Theory - these board governance interventions enhance the board's ability to exercise independent judgment and engage in effective monitoring, and thus subject CEO behaviour to effective performance incentives. In these respects, the results that Chapter Ten presents are most revealing. Firstly, they show that the diffusion of corporate governance codes of best practice has been far-reaching. Secondly, and conversely, the results also show that boards that have adopted these purported board governance best practices are no more efficient in aligning CEO cash rewards to measures of firm-level performance than are boards that have not done so. Having an independent chairperson, a large percentage of non-executive directors (irrespective of their stock holdings), non-executive dominated remuneration or nomination committees, does not significantly and positively moderate the relationship between CEO cash reward and firm-level performance, nor do these factors significantly negatively predict the level of CEO total cash reward. From these results, it can be inferred that mandating board structural

independence does not necessarily enhance the board's capability to effectively manage CEO cash reward and performance.

The concluding chapter, Chapter Eleven, considers these empirical findings in light of the logic of hypothesised structural and economic model of CEO reward determination proposed in Chapter Four. Overall, it is argued that the structural and economic models of CEO reward determination lack explanatory power. It also argues that extant empirical inconsistencies are in part attributable to the methodological isomorphic predilection for using a fixed effects approach to model estimation and specification in extant research in this domain. Following on from this discussion, the chapter considers the study's overall limitations and implications for theory, practice, and future research. Accordingly, further research is recommended to ascertain: i) the basis on which the board actually evaluate CEO performance; ii) which performance measure(s) are used; iii) the extent to which their performance judgments are based on these criteria; and iv) the extent to which boards' evaluations of CEO performance are then used to determine CEO cash rewards.

1.3 Conclusion

This thesis is the first of its kind to rigorously test the effects of various firm, ownership, and board structural characteristics on CEO cash reward using a system GMM approach to estimation. This thesis empirically tests and critically evaluates the continuing preoccupation with board structural characteristics as criterion-valid indicators of board effectiveness to manage the association between CEO reward and performance. The findings presented in this thesis challenge the supposition in extant corporate governance codes of best practice that board structural characteristics can help militate against CEO reward excess. In other words, this thesis questions the presupposition that board structural characteristics intended to improve board monitoring and decisional processes necessarily moderate the relationship between CEO reward and performance.

There is no doubt that recent corporate governance interventions and codes of best practice in Australia provide an interesting context for examining the conceptual and empirical contours of CEO cash reward and performance management. The study represents the first attempt to examine longitudinally, and using a more rigorous approach to parameter estimation, the main and interactive effects of board structural characteristics; characteristics purported to enhance the efficacy of board monitoring and decision-making in relation to

CEO reward. The results from the Australian domain indicate that one critical component of CEO total reward – cash reward – is insensitive to *both* past performance and board structure.

These results question whether board structural characteristics necessarily precipitate board rational and strategic choice in the management of CEO cash reward and performance. Indeed, the findings suggest that board structural characteristics have been ineffectual in moderating the relationship between CEO cash reward and performance, and that this remains the case. These findings hold considerable significance for both governance theory and regulatory practice, and for the structural determinism underpinning both. While governance theory and best practice prescriptions have continued to centre on board structural characteristics - most notably, board independence - as predictors of board monitoring and decisional effectiveness, there is no evidence that these prescriptions have actually led to CEO cash rewards becoming more performance-contingent. In essence, the widely embraced assumption that boards exhibiting greater structural independence may be more effective ‘stewards’ of owner interests may be ‘too good to be true’.

Chapter Two

Theoretical Perspectives on CEO Reward and Performance: Insights and Oversights

2.1 Introduction

Chapter One outlines the underlying rationale and guiding premise of this thesis. While a number of studies examine factors that moderate the CEO reward and performance relationship, it is argued that a cogent theoretical model is still lacking. Berry (1993) suggests that theory acts as a frame of reference for model specification, and parameter estimation. He also maintains that theory construction is pivotal for judging model specification and estimation, and that any shortcomings identified in a theoretical specification can result in the specification of the wrong functional form as well as an inefficient approach to parameter estimation.

To this end, this chapter delineates the theoretical assumptions, prescriptions, predictions, and omissions of each of the two dominant theoretical perspectives relating to CEO reward and performance. It does so with a view to improving the theoretical specification of CEO reward and performance and to develop a more integrated and comprehensive theoretical framework on CEO rewards and performance. Following this, it is argued that the distance between Agency Theory and the Managerial Power Model may not be as great as the protagonists commonly assume and that both approaches have legitimate roles to play in enhancing our understanding of the complex internal and external determinants of executive reward practice.

2.2 Agency Theory

The tenets of Agency Theory have important implications for understanding CEO reward determination processes. Agency Theory postulates have also played a pivotal role in both research and corporate governance regulation concerning CEO reward and performance, particularly in its prescription for a greater emphasis on performance-contingent rewards as the antidote for executive agent opportunism and effort aversion (Jensen and Meckling, 1976).

Agency Theory construes the 'firm' as a 'legal fiction which serve[s] as a nexus for a set of contracting relationships among individuals' (Jensen and Meckling, 1976: 310), and where inputs are coordinated to create outputs that are shared among inputs (Fama, 1980: 290). Jensen and Meckling (1976) suggest that the modern corporation is characterised by the separation of ownership from control. That is, diversified and dispersed owners delegate the day-to-day management of the firm to hired agents. An *Agency Relationship* transpires when 'one or more persons [principals] engage another person [agent] to perform some service on their behalf which involves delegating some decision making authority to the agent' (Jensen and Meckling, 1976:308).

In the large to medium-sized Australian public companies sampled in this study, firm ownership is separated from the day-to-day control of the company, which is delegated to salaried executives. Fama and Jensen (1983), eminent Agency Theorists, argue that it is inefficient for diffuse and diversified principals or shareholders to assume direct responsibility for their firm's decisions, and consequently, decision control (monitoring and ratifying) and management (initiating and implementing). By delegating this control to manager-agents, principals thus bear the risks and the wealth effects of agent operational, strategic, and financial management and control of the company (Fama and Jensen, 1983: 304). By extension, principals are deemed the residual claimants of the difference between costs and revenue (Fama, 1980), that transpires from manager-agents efforts to coordinate inputs from suppliers, creditors, employees, customers and to maximise the firm's present value (Jensen and Meckling, 1976). However, Agency Theory posits manager agents are more inclined to act in their own interests at the expense of the interests of principals.

A key premise of Agency Theory is that manager agents are sagacious 'utility maximisers', and that they are self-motivated, boundedly rational, and risk-averse (Eisenhardt, 1989; Jensen and Meckling, 1976; Levinthal, 1988). Agents are thus considered to derive considerable disutility from expending effort and bearing risk in order to advance the interests of principals (Fama, 1980). This body of literature assumes that as controllers of organisational information, CEO-agents are able to exploit their knowledge and make strategic choices and financial decisions that may deviate from principal wealth creation (Jensen and Meckling, 1976). Behaviours that deviate from principals' interests include shirking, manipulating cost controls, budgets and performance standards, pursuing conglomerate mergers and low volatility projects, an over consumption of pecuniary and

non-pecuniary benefits, and transferring wealth from stockholders to debt holders (Jensen and Meckling, 1976; Levinthal, 1988).

An added complication is that dispersed principals are not in a position to directly monitor and evaluate agents' management and control of the firm. The resultant *information asymmetry* makes it difficult for diversified principals to detect managerial opportunism, or to discern suboptimal or optimal managerial behaviour and ability (Fama, 1980; Levinthal, 1988), which, in turn, presents principals with the twin problems of 'adverse selection' (i.e. limited knowledge of the potential executive hire's real ability) and 'moral hazard' (Holstrom, 1979) – that is, limited information and certainty about, and control over, agent behaviour once appointed. Further, this information asymmetry makes it very difficult for principals to detect managerial opportunism. This means that principals can only infer moral hazard from the difference between costs and revenue, and the firm's value in capital markets. Costs of the firm also include costs associated with enforcing mechanisms to discipline managerial opportunism, and limit managerial discretion. Agency costs are also said to vary from firm to firm, with the degree of cost depending on the ease with which managers can advance their own preferences over those of principals, and the ease and cost of devising, monitoring and incentive mechanisms that are designed to limit aberrant activities of manager-agents (Jensen and Meckling, 1976: 328). Therefore agency costs not only encapsulate *residual loss*, but also costs involved in designing and implementing disciplinary mechanisms to constrain agent opportunism.

According to Agency Theory, the responsibility to alleviate agency problems is conferred upon the board of directors. The board of directors can align the interests of principals and CEO-agents in two ways that essentially encompass CEO reward and performance management. Firstly, it can control and discipline agent opportunism through direct monitoring and behavioural observation. Secondly, the board can induce an alignment of interests by providing the manager-agents with results-based financial incentives or executive incentive contracts to increase shareholder wealth. Agency theory however underscores the minimisation of residual loss and agency costs as an important criterion for defining the effectiveness of the board's governance of the agency relationship. Thus providing cost-effective performance incentives, as well as controlling the CEO-agent's company strategy formulation and execution, and operational and financial management, are important requirements for the effective governance of the agency relationship.

Fama and Jensen (1983) maintain that the board can maintain control over manager-agents by demarcating decision control from decision monitoring. They refer to the board's responsibility to ratify and monitor executive decision and strategic management as 'decision and strategic control' (1983: 308). Executive agents, on the other hand, are responsible for the 'strategic and decision management' of the company (Fama and Jensen, 1983: 308). This demarcation of responsibilities enables the board to be 'the apex of the decision control system' and have the power to hire, fire and reward executives and the CEO in an attempt to prevent them from expropriating the interests of residual claimants (Fama and Jensen, 1983: 311). In short, it is the board's responsibility to monitor, motivate and discipline agent opportunism.

Besides monitoring agents, the board of directors is also responsible for managing agent rewards by specifying the performance criteria for such rewards, and thus measuring agent performance against the criteria specified to determine rewards (Fama and Jensen, 1983: 310). Agency Theory also considers executive incentive contracts as an 'important mechanism to control agency costs, and align the interests of executive agents and shareholders. Agency Theory in its prescription for executive incentive contracts, assumes that CEO reward is instrumental in ameliorating agent opportunism and risk and effort aversion. As suggested earlier however, it is important for the board to optimise executive incentive contracts. 'Optimal contracting' is the cornerstone of Agency Theory and ostensibly a key responsibility of the board. Optimal contracting, which is seen as a product of arm's length bargaining and board rationality and strategic choice, occurs when risk-averse agents are provided with cost-effective reward arrangements that incentivise shareholder wealth creation. In other words, increasing the level of reward at risk provides performance improvements that, through self-funding, offset the cost of any increase in incentive reward (Abowd, 1990: 53).

Agency Theory also assumes that executive incentive contracts serve as an important disciplinary mechanism by virtue of *ex post settling up*. According to Fama (1980) executive incentives contracts reflect *ex ante*, the expected value of the executive's marginal product (1980: 299). However, in an attempt to reduce moral hazard, the board is assumed to adjust executive rewards according to whether the *ex ante* expected value of the executive's marginal product, specified at the beginning of the performance period, deviates

from the *ex post* measurement of the executive's marginal product (Fama, 1980: 299). Further, Agency Theory assumes that anticipated wage revisions, and the potential for downward adjustments in executive reward in the event of poor performance, act to optimise executive performance. The notion of '*ex post* setting up' also implies executive rewards are conditional on the executive's measured marginal product (Fama, 1980), and thus it is reasonable to predict that CEO rewards will, *ceteris paribus*, co-vary with firm performance. Agency Theory predicts that managerial or executive reward will vary according to firm-level performance because it assumes, based on the premise of moral hazard, agent actions are unobservable and that the effects of such actions are necessarily inferred from firm-level performance. Thus, executive reward for performance is an important requirement to minimise moral hazard, and to provide effective executive performance incentives, even though the agent may be provided with existing incentives from firm share ownership, and firm stock options (Aggarwal and Samwick, 1999a: 66-67).

Agency Theorists also maintain that agent ownership intuitively acts as a more direct mechanism to align the interest of agents and principals. Jensen and Meckling (1976: 353) suggest that stock options and executive shareholdings maximise joint utility for agents and principals by facilitating simultaneous wealth increases. Executive stock options, consistent with Agency Theory, are issued on the premise that they align the interests of shareholders and agents by providing incentives for agents to raise the value of the underlying stock (Oviatt, 1988). Agency Theory does however recognise that agents may have pre-existing incentives to manage the company effectively. For example, value destroying agent behaviour may be constrained by disciplinary mechanisms emanating from the managerial labour market, market for corporate control, and regulation, and reputation costs more generally.

Agency Theory predicts that where incentives are applied, executive reward outcomes will be aligned to shareholder wealth *ex post*. This logic has extended to empirical research where the sensitivity between CEO reward and firm-level, market-return performance metrics has become an index of optimal contracting. High sensitivity signifies a firm's commitment to incentivising shareholder value creation (Lippert and Porter, 1997:127); the greater the sensitivity, the greater the alignment of principal and agent interests. In recent times corporate governance reforms have accentuated the pressure on boards to make CEO reward more performance contingent.

Agency Theory also makes an implicit assumption that the sensitivity of executive reward is conditional on a range of contextual and situational factors negotiated by the board of directors, and that in some contexts executive incentive contracts may be less effective. In other words, Agency Theory recognises that contextual and situational factors can attenuate the sensitivity of executive reward to lagged performance.

Agency Theory assumes that the board of directors manage the agency relationship with a view to minimise agency costs and prompt tradeoffs between executive incentive contracts and direct monitoring. Eisenhardt (1989) maintains that in some circumstances the direct monitoring and behavioural appraisal of agents may be extremely difficult, thus impelling the board to seek to control agent behaviours primarily through results-based financial incentives. Eisenhardt (1989) further argues that director 'stewards' may seek to manage the prospect of residual loss by substituting control mechanisms. For instance, direct monitoring is assumed to be more efficient when the CEO's job performance is less complex and characterised by low task programmability (Eisenhardt, 1989). Zajac and Westphal (1994: 121) show that there are 'diminishing behavioural returns' associate with higher levels of incentive reward in firms where there is a high variance in stock returns. They also suggest that firms with complex corporate strategies face diminishing 'behavioural returns' to increases in monitoring. Gerhart and Rynes (2003) further suggest that it is even more difficult to monitor CEOs, let alone identify desired managerial behaviours, when the firm's business is diversified across a range of product and service markets. Tevlin (1996) finds that external ownership concentration may precipitate tradeoffs between result-based incentives for external monitoring of concentrated shareholders. Notwithstanding these decisional challenges, under Agency Theory result-based executive contracts are typically deemed to be the preferred solution to overcoming tension inherent in agency relationships (Holstrom, 1979). For this reason, Agency Theory has given rise to a torrent of research examining the sensitivity of executive reward to market-return performance.

Agency Theory recognises that the sensitivity of CEO reward to firm-level performance depends also on agent risk bearing. According to a behavioural model of Agency Theory, risk bearing refers to the agent's perceived risk taking, and the potential for loss of wealth (Larraza-Kintina, Wiseman *et al.*, 2007; Wiseman and Gomez-Mejia, 1998). Larraza-Kintina *et al.*, (2007: 1002) suggest that agent risk bearing is a positive function of the

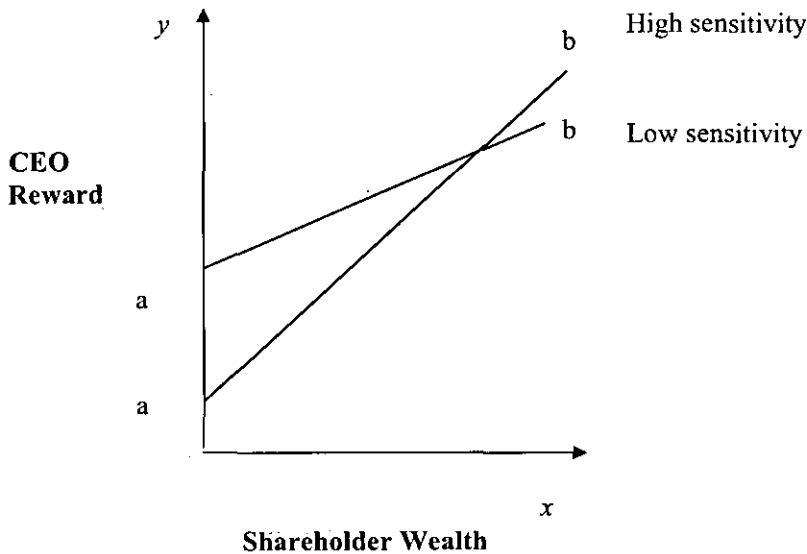
agent's perceived employment risk, and second, the agent's perceived compensation risk or the unpredictability of future earnings.

Agency Theory postulates that agents are risk averse, and that the efficacy of executive incentive contracts in motivating shareholder value creation is contingent on agent risk-bearing stemming from agent ownership in the firm (Lambert and Larcker, 1987; Tevlin, 1996) and the variance of the firm's performance (Aggarwal and Samwick, 1999a). Aggarwal and Samwick imply that in order for the board of directors to account for agent risk-bearing in the management of the relationship between reward and performance, they would necessarily have to examine the variance of the performance measure (1999a: 77). In turn, the highly observed variance of firm performance may require that the agent receive additional fixed reward or a risk premium to dissuade them from leaving the company (Lambert and Larcker, 1987). Similarly, Hall and Liebman (1998) argue that lowering the 'sharing rate' (i.e. the incremental relationship between CEO reward and shareholder gains) may provide a stronger incentive effect because a high sharing rate transfers undue compensation risk to agents to the point that they may avoid high net present value projects (see also Conyon and Sadler, 2001). Since boards are charged with the difficult task of balancing agent risk and performance incentives in a cost-effective way, the board has to judge what level of executive-reward for performance is sub-optimal in terms of agent risk preferences, and what level of compensation at risk (incentive reward) will provide agent incentives to act in the interests rather than against the interests of principals.

Overall, such considerations recognise that both the effects of firm-performance measures on CEO reward depend on other factors. In this regard, the theoretical precepts underpinning Agency Theoretic prescriptions both promote and limit the level of results-based executive incentives or performance-contingent rewards. As shown in Exhibit 2.1, presents a graphical representation of this logic. The sensitivity of CEO reward to measures of firm-level performance is indexed by the slope coefficient b . The steeper the slope and the higher the value of b , the lower the intercept, a , is likely to be and the greater the sensitivity of reward to performance. The intercept represents the average amount of CEO reward that is not performance contingent. It follows that while the intercept term will always be a positive integer, as the intercept term increases, the slope coefficient decreases (Abowd, 1990). In light of these considerations above, it seems improbable that a perfect linear relationship

exists between CEO reward and performance (i.e. $b=1$). Consistent with the assumptions of linearity, reward cannot be purely performance-based unless the intercept, a , equals zero.

Exhibit 2.1 Strength of Reward-Performance Sensitivities



While Agency Theory promotes executive incentive contracts and direct monitoring by the board as important mechanisms to limit agency costs and the residual loss incurred by principals, it also recognises that the board of directors may not be effective in the governance of the agency relationship. Upon closer examination, Agency Theory is also predicated on institutional logic and structural determinism. Fama and Jensen (1983) suggest that having internal managers on the board is important in terms of providing firm-specific knowledge and expertise, but highly problematic from manager-agent reward and performance management perspective. Fama and Jensen further suggest that 'outside' board directors have a pivotal role to play in setting internal manager rewards, and also limiting the discretion and influence of internal managers can have on such decisions (1983: 315). According to both Fama (1980) and Eisenhardt (1989) 'outside' directors have a stronger capability to objectively monitor the CEO, measure and reward CEO performance. By extension, Fama (1980) suggests that 'outside' directors have greater incentives to be more diligent in monitoring internal managers because the market for their services prices them according to their performance as 'referees' (1980: 294).

In summary, Agency Theory is predicated on the presupposition that board structural arrangements are an important boundary condition for executive reward-performance sensitivity. Structural characteristics such as having a large proportion of outside directors on the board, are associated with objective CEO performance evaluation and determination of CEO reward to “revive effective governance” (Bilimoria, 1997: 852). This implies that structural characteristics enhance the governance of the agency relationship by enabling diligent board monitoring, rational and strategic choice, and turn providing the conditions for optimal contracting.

While Agency theory has made a significant contribution to our understanding of CEO reward and performance, it has a number of general shortcomings that must be acknowledged.

The first problem relates to structural determination. Agency theory recognises that board directors may not always manage and control executive reward and performance effectively, and attributes board decisional and monitoring deficits to board structural characteristics. It also presupposes that board structural arrangements enable the board to act dutifully, rationally, and make strategic choices and objective judgments when managing and controlling CEO reward and performance relationship. This institutional presupposition has become the edifice of corporate governance codes of best practice within and beyond Australia in recent times, even though it remains empirically uncorroborated.

A second and related problem is that while directors do have a collective legal and ethical responsibility to manage the agency problem, and to ratify and monitor agent decision and strategic management (Fama and Jensen, 1983), the assumption that they can validly and reliably reward CEOs on the basis of performance may be overly optimistic. This assumes *a priori*, that they have the capabilities to select valid measures against which they reliably evaluate CEO performance. Further, executive incentive contracts are assumed *ex post*, to be predicated on an outcome-based agent performance evaluation. However, it remains unclear to what extent agents are rewarded for performance, how performance is measured, whether board judgments are necessarily objective, and finally whether the intended incentive effects of results-based incentives are ultimately realised via *ex post* performance improvements.

Lambert and Larcker (1987) offer a number of insightful caveats against Agency Theory assumptions regarding the board's selection of criterion measures to evaluate CEO performance. Agency Theory perpetuates a uni-dimensional construction of performance. Performance based compensation contracts, subject to agent risk preferences, are assumed to induce agent effort, decisions, and actions, which are compatible with principals' interests (Lambert and Larcker, 1987). Thus the model suggests that executive incentive contracts are a function, *inter alia*, of performance evaluation. Given the 'noise' attendant to the performance evaluation of agents based exclusively on share performance, it is intuitive for boards to specify additional non-market performance measures to make more attributions about agent actions and decisions (Lambert and Larcker, 1987). Market performance is considered to accord most closely with Agency Theory logic. However, Lambert and Larcker suggest that it is difficult to discern, with any rigour or precision, the extent to which market performance is attributable to agent actions and decisions. They maintain that boards place differential weight on accounting and market-return measures of performance. They (1987: 107) suggest that the relative weight placed on accounting versus market measures is a function of:

- i) evaluations of the sensitivity of performance measures to noise versus agent actions and decisions, which involves examining the variance of firm performance ;
- ii) the business cycle of the firm, and its investment activity, such that market measures are preferred when accounting measures do not reflect agent actions and decisions in the performance period;
- iii) executive ownership, given that agent holdings provide incentives to improve market performance and may spur the use of alternative measures.

These authors allude to the possibility that the Agency Theory overlooks the possibility of differential sensitivity; that is, specific reward components may be differentially sensitive to accounting and market measures. Agency Theory oversimplifies the dimensionality of performance and nuances of executive incentive contracts, and thus ignores the possibility that different components of total reward can have different performance conditions, and an array of incentive effects. Ostensibly, these omissions have important implications for the functional form and parameter estimators used to gauge the average sensitivity of executive reward to prior performance. This is an important focus of discussion in Chapter Five.

Agency theory is also problematic in terms of the assumption of ownership dispersion among principals, since it does not take cognisance of variation in ownership structure.

Ownership concentration may well have implications for the internal governance of the board, as well as the board's management of CEO rewards. As we will see in Chapter Three, recent research furnishes suggests that external ownership concentration is an important determinant of CEO reward level and composition.

The theoretical literature on CEO reward and performance has been dominated by financial economists and legal academics who tend to assume that external ownership is fairly dispersed. It is believed that there may be substantial benefits in conceptualising CEO reward and performance from a multi-disciplinary perspective. For example, concepts from applied psychology can be used to provide greater insight into the relationship between the board and large external block-holders. In a discussion of social facilitation theories, Haslam (2007) maintains that the performance of people being evaluated is invariably influenced by the perceived loss of approval or, conversely, the perceived acceptance of those monitoring performance. It is thus conceivable that ownership concentration will provide directors with greater incentives to pursue optimal contracting, such that the level of performance-insensitive CEO rewards is reduced. As such, a more comprehensive theoretical framework of CEO reward determination may require a more multi-disciplinary foundation.

Having examined the key postulates of the Agency Theory, we can now turn to examine the second and, to some, the main alternative theoretical perspective on CEO reward and performance management, namely Managerial Power Theory.

2.3 Managerial Power Model: An Alternative Framework or Extension to Agency Theory?

The Managerial Power model posits that the determination of CEO rewards primarily reflects the contours of organisational power and politics, especially power relativities between CEOs, board members, and external shareholders (Bebchuk and Fried, 2002; 2004; Finkelstein, 1992; Finkelstein and Hambrick, 1988; Finkelstein and Hambrick, 1989; Grabke-Rundell and Gomez-Mejia, 2002; Gumbel, 2006).

Management Power Theory incorporates two pivotal assumptions, which are purported to challenge Agency Theory notions of optimal contracting. Firstly, it emphasises the contradictory position occupied by the board itself, its vulnerability to executive influence,

and the potential for board complicity in offering overly generous or sub-optimal levels of reward. Secondly the Managerial Power perspective is sceptical of 'arms-length bargaining' over the terms and conditions of executive employment. This approach questions whether boards either can or wish to exercise sufficient control over the implementation and management of reward decisions so that they do not deviate from shareholder interests.

USA law academics Lucien Bebchuk and Jesse Fried (2002, 2004), contend that persistent findings of weak or non-existent reward-performance sensitivity are consistent with their view that the determination of incentive contracts and CEO rewards deviate from notions of optimal contracting. In essence, they propose that CEO power (especially relative to that of shareholder and non-executive board members) is positively related to the level of reward and to reward performance insensitivity. Bebchuk and Fried (2002; 2004) assert that CEO reward can become decoupled from performance, especially when the CEO has power to influence both the structure and level in such a way that is suboptimal to shareholders and discordant to optimal contracting.

Thus 'rent extraction', a central construct in Managerial Power Theory, occurs when agents appropriate surplus or rents beyond their arm's length negotiations with their company boards (Bebchuk and Fried, 2002). In Agency Theoretic terms, this systematic over-reward, in the absence of concomitant performance to offset such a cost, exacerbates the moral hazard and residual loss incurred by the principals. The claim, in essence, is that CEOs exercise undue influence over how their reward is set, constrained only by the possibility of shareholder 'outrage' if they are caught extracting rents.

Bebchuk and Fried (2002; 2004) identify three main features of 'rent extraction' and 'pay without performance': (i) 'stealth compensation'; (ii) 'perverse incentives'; and (iii) board complicity. Regarding stealth compensation, Bebchuk and Fried (2004) identify arrangements by which CEOs are able to extract disguised and deferred income in the form of generous sign-on payments (or 'golden hellos'), special retirement benefits, retention and long-service bonuses, no-interest company loans, post-termination consulting fees, special payments for termination following takeover or merger (or 'golden parachutes'), and the like. They reserve particular criticism for retirement benefits which are not performance-linked, which are excluded from the annual remuneration reports and, hence, from reward-performance sensitivity estimates, and which thus create false readings of both annual

reward level and incentive sensitivity (Bebchuk and Jackson, 2005, 848, 851-52). Stealth compensation also acts as a risk premium to offset the additional risk stemming from increased level of incentive reward. In other words, increasing the level of performance-based reward exacerbates further residual loss for principals as CEO-agents engage in self-protecting behaviours that maximise their wealth and minimise their risk exposure, and in so doing destroy the *ex ante* purpose of incentives in the first place.

In this respect, Bebchuk and Fried (2002; 2004) are especially critical of the widespread use and abuse of executive option plans. In support of their case, they point to the continued prevalence of unrestricted option plans in US companies (which deliver undeserved windfall gains to option holders in rising markets); option exercise prices set at grant date market prices, options without non-exercise periods (which encourage speculative behaviour by allowing executives to unwind holdings at will); plans which allow for the re-pricing of 'out-of-the-money' options, and the dearth of indexed options which filter out general market movements. Further, exponents of the Managerial Power perspective contend that even where hurdles are applied, these tend to use absolute rather than relative targets (which in bull markets will deliver windfall gains) and are frequently softened ('retested') to ensure payout despite declining firm performance (Finkelstein and Hambrick, 1988; Indjejkian and Nanda, 2002). Bebchuk and Fried (2004) also highlight the use of automatic 'reloading' of options following exercise of an existing option holding. Contrary to optimal contracting, agents can insulate themselves from downside risk, while boards fail to apply cost effective performance incentives. Incentive distortions, by default, contradict the purported benefits of equity-based long-term incentive plans raised by Jensen and Meckling (1976).

According to exponents of the Managerial Power perspective, boards are passive and compliant in the face of CEO power, and thus help facilitate systematic rent extraction and stealth compensation. Conceivably 'over time, CEOs and the Board members may develop mutual trust and begin to attach value to the relationship that goes beyond the purely economic value created by transaction' (Tosi *et al.*, 2000: 302). Further, issues of power may interfere with, or dilute the performance incentive, designed to ameliorate agency problems and thus the enforcement of optimal contracts (Finkelstein and Hambrick, 1989). In this regard, CEO reward, far from being an artifact of arm's length contracting *per se*, is essentially a product of Managerial Power. Consequently, Managerial Power inhibits the

board's capacity to enforce optimal contracts, and thus to provide effective performance incentives.

Bebchuk and Fried (2004) delineate a number of board governance practices and conditions which can facilitate executive 'capture' of board decision-making, whereby an incumbent CEO can hamper the boards diligence in pursuing optimal contracting to the point that it induces board complicity in decoupling reward from firm performance. First, dispersed external ownership removes external pressure from the board to serve shareholder interests. Second, interlocking boards² stand to remove downward pressure on reward levels. Third, CEO/Board chairperson duality – a common feature of USA corporations – confers substantial power on the CEO, which makes the board more likely to err on the side of the CEO (Bebchuk and Fried, 2002). Fourth, having a high proportion of inside directors – that is, internally recruited directors – stands to enhance Managerial Power precisely because such directors are or have been salaried executives of the firm. However, outside directors may be beholden to the incumbent CEO in that she/he may have influenced their appointment. CEOs may also influence the nomination of outside directors by supporting those candidates who are demographically similar to themselves and who are thus less likely to engage in oppositional action. Consistent with Agency Theory, the Managerial Power perspective posits that different board configurations affect the board's management if the relationship between CEO reward and performance.

The Managerial Power model also posits that the threat of shareholder disapproval ('outrage') precipitates camouflage practices intended to legitimate high employment and post employment reward as necessary 'retention' incentives or they structure reward to escape transparency of disclosure mandates:

“We have argued that managers' ability to overpay themselves and to decouple their pay from performance, and the magnitude of the resulting costs to shareholders, depends on the extent to which flaws in compensation arrangements are widely recognised by outsiders. Thus, how much executives can get away with depends on the degree to which outsiders are aware of the distortions in compensation

² Such as there one CEO serves on the board of company B and the CEO of firm B serves on the board of company A.

arrangements that managers seek to camouflage.” (Bebchuk and Fried, 2004: 199)

External reward consultants are said to play a significant role in camouflaging CEO stealth compensation. It is suggested that the CEO can control the flow of information to the company board by influencing the recommendations of reward consultants (see Bebchuk and Fried, 2004). It is not atypical for CEOs to be in charge of appointing external compensation consultants to provide information to the board’s remuneration committee, and, as such, ‘the information presented and the way it is framed will be chosen with an eye toward maximising manager’s compensation’ (Bebchuk and Fried, 2002: 21). Coffee (2006:1) offers some provocative views relating to consultants who inform and advise the board, asserting that ‘all board directors are prisoners to their gatekeepers’:

“The board of directors in the United States is today composed of directors who are essentially part-time prisoners with other demanding responsibilities. So structured, the board is blind, except to the extent that the corporation’s managers or its independent gatekeepers advise it of impending problems.” (Coffee, 2006: 7)

Thus, ‘independent’ reward consultants who are employed by the corporation to procure reward proposals and recommendations in conjunction with the top management team for directors may actually compromise board independence. Furthermore, as the impenetrable prose of many a company annual report/proxy statement attests, the language used by professional gatekeepers may serve to confuse board members and shareholders alike, and obscure rather than illuminate the true basis of executive reward determination.

While Agency Theory prescribes result-based performance incentives as a primary mechanism to manage the agency relationship, the Managerial Power perspective suggests that executive incentive plans are themselves vulnerable to managerial opportunism and do not automatically guarantee shareholder alignment. Accordingly, the Managerial Power model prescribes corporate governance interventions that aim to buttress the board’s capacity to enforce optimal contracts. These interventions aim to restore director incentives to assert shareholder interests over those of the incumbent CEO, and to make directors more ‘independent’ primarily through structural reforms.

Bebchuk and Fried (2002; 2004) recommend a number of governance interventions to mitigate rent-extraction and incentive distortion. These prescriptions include: increasing shareholder power by allowing them to vote on reward arrangements; using indexed options and relative performance measures; increasing the transparency of CEO rewards to tighten the outrage constraint, especially post-employment arrangements; mandatory and timely disclosure of the unloading of shares and options; regular reviewing of the charter of the remuneration committee to buttress the alignment of performance and reward; endowing shareholders with greater power to influence board director re-appointment; increasing the proportion of independent directors; increasing equity ownership on the board; and removing CEOs from remuneration and nomination committees. In addition, exponents of the Managerial Power perspective, while acknowledging the role of the capital markets in assessing firm performance and agency costs, argue that these forces are too remote to withstand managerial opportunism. Indeed, the distal nature of market factors enables executives and complicit boards to camouflage rent extraction (Bebchuk and Fried, 2004).

As such, and contrary to Agency Theory, the Managerial Power view predicts a positive relationship between Managerial Power and the level of CEO performance-decoupled reward, and by extension a weak relation between reward and performance. By implication, the Managerial Power approach predicts continued growth in the level of CEO rewards, and a further decoupling of CEO rewards from performance.

While the Managerial Power approach offers potentially valuable insights on the psychopolitical association between the CEO and board members and the factors that can attenuate the relationship between CEO rewards and performance, it too has a number of conceptual, and explanatory shortcomings.

Like Agency Theory, the Managerial Power approach assumes principal dispersion, and does not evince the ways in which ownership concentration can influence internal corporate governance and CEO rewards. As suggested above, external block-holders may have a significant role to play in shaping board governance practices as well as influencing the board's management of CEO reward and performance. While the Managerial Power perspectives make some progress towards this in its explication of the 'outrage constraint', it does not elucidate the impact of ownership concentration on the decisional processes that determine CEO reward outcomes. It may be suggested that this is because, like Agency

Theory, the Managerial Power thesis is predicated on the supposition the external owners are widely dispersed.

The Managerial Power approach attributes the board's inability to resist managerial influence chiefly to compromised board governance practices. Accordingly, exponents suggest that CEOs should be removed from remuneration and nomination committees to redress normative pressures for board complicity. Bebchuk and Fried (2004) imply that non-executive directors are positive intermediaries in the principal-agent problem only when board structural independence is maintained: by removing CEO from remuneration and nomination committee, and by ensuring board chair-CEO role separation. However, this in turn overstates the capacity of board structural independence to control growth in CEO rewards and to positively moderate the reward performance relationship. Although, even where these conditions are met, it is equally plausible that boards will still not have the capability to structure effective incentives for CEOs, or have the requisite skills and abilities to reward CEOs on the basis of valid and reliable performance measurement. The solutions proffered to ameliorate Managerial Power and CEO entrenchment, which focuses on board governance structures, assume that 'independent' directors exercise effective management and control of CEO reward and performance. The implication is that board practices aimed to enhance board independence from executive agents, do not necessarily result in effective decisional processes to optimise CEO reward and performance processes is a proposition which will be taken up in detail in forthcoming chapters. In this regard, the Managerial Power Perspectives shares a number of criticisms levelled against Agency Theory presented above.

Perkins and Hendry (2005) also questions whether boards can themselves scrutinise the merits and demerits of different reward proposals, as well as the validity of reward data and survey. According to Murphy (2002), boards favour stock options chiefly because they see them as low-cost and are ignorant of the economic and opportunity costs involved. Murphy also advances several reasons for U.S. board reluctance to embrace presents indexed option plans. First, they are costly to set up. Second, they lack appeal and incentive effectiveness because they are perceived by agents to have a low probability of payout. Thirdly, conventional options are used more frequently because, having a fixed exercise price, they incur no accounting charge (Murphy, 2002: 857). This last point is especially compelling in that it suggests that the Managerial Power Thesis is not sufficient to explain the use of

conventional option plans. On this basis, the underlying problem may be board financial illiteracy rather than executive capture of board processes.

While it attempts to challenge the postulates of Agency Theory prescriptions, Managerial Power prescriptions for ameliorating CEO entrenchment on the board still assume, *a priori*, that board structural characteristics will restore board stewardship and enhance the ability to effectively manage CEO reward and performance. Reward without performance can also be explained more simply in complex dynamic board decision processes, where boards appraise a myriad of factors in their deliberations pertaining to CEO reward and performance. Even when board governance is based on best practice prescriptions, there is no guarantee that the reward decisions made by 'independent' board members will be valid and reliable. Independent directors can still 'get it wrong'. As such, it is equally plausible that performance decoupled CEO reward may be a methodological artefact of the misspecification of the CEO reward and performance relationship. This contention is developed in Chapter Five.

In sum, the Managerial Power Thesis is also susceptible to similar criticisms to those levelled at the Agency Theory. Both perspectives share a number of assumptions even though Bebchuk and Fried (2004) suggest otherwise. As highlighted above, Agency Theory recognises that potential for internal managers on the board to interfere with the enforcement of executive incentive contracts (See Fama and Jensen, 1983). Bebchuk and Fried (2004) overstate the distinctions between these two theoretical perspectives, their postulates, and prescriptions, and thus their complementarities.

2.4 Synthesising Agency Theory and the Managerial Power Approach.

Despite their interpretative differences, Agency Theory and Managerial Power perspectives actually have much in common. Both theories are consistent in terms of theorising CEO-agents as self-serving and risk averse. Both recognise that the prospects for greater 'optimal contracting' and stronger bi-directional associations between executive reward and firm performance lie with the outlook and behaviour of those stakeholders most directly responsible and accountable for executive performance and reward management, namely the members of the board. Both approaches advocate greater use of direct share ownership as a means of executive reward. Other solutions proffered by Bebchuk and Fried (2002, 2004) carry resonances of Agency Theory: increasing shareholder power over directors; exclusion

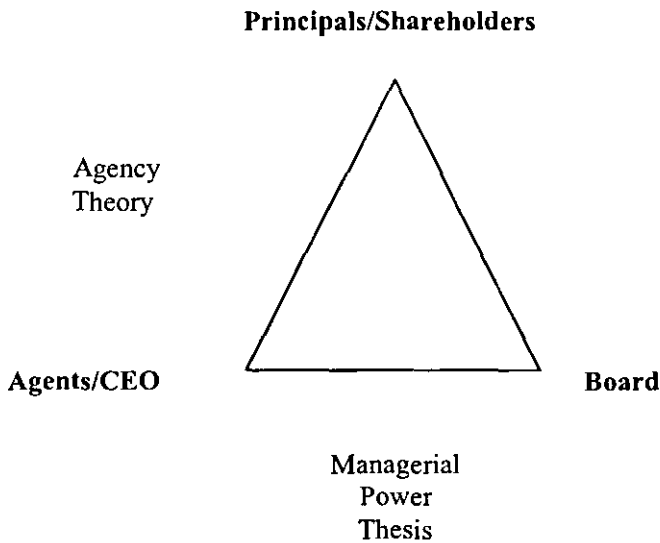
of all but independent directors from board compensation committees; mandatory shareholder ratification of all components of top executive reward; use of indexed options; compulsory share ownership; and full disclosure of all post-employment benefits.

Arguably, the chief value of the Managerial Power model, both descriptively and prescriptively, lies in extending analysis of the principal-agent problem to the relationship between external shareholders and the board itself: 'there is one agency problem between shareholders and the board directors and a further agency problem between the board and the CEO' (Gumbel, 2006, 225). Further, the Managerial Power perspective extends the agency problem to the determination and management of executive reward itself. Also, while the purpose of incentive contracts is to optimise performance, the Managerial Power model argues that agents can distort and dilute the *ex ante* purpose of these incentives, such that the *ex post* rewards are decoupled from performance. Indeed, Bebchuk & Fried (2002) imply that CEO reward is both a chief source of the principal-agent problem and one of its most promising solutions.

As such, an integration of the two models would appear to have much to offer both the theory and the practice of CEO reward and performance management. Reconceptualising agency and power relationships as being tri-dimensional, as illustrated in Exhibit 2.2, provides a means of reconciling the two theoretical perspectives, and creating a more holistic conceptualisation of the chief interests, agencies and relational possibilities involved. First, as indicated by the first corporate governance dimension in Exhibit 2.2, traditional Agency Theory is concerned chiefly with the relationship between agents/executives and external principals/owners. Incentive contracts and monitoring are prescribed as remedies for the conflict of interest between agents and principals, with responsibility for enforcing these remedies lying with the board of directors, who are simply assumed to be effective in controlling CEO reward decisions so they do not deviate from principals' interests (Fama and Jensen, 1983; Jensen and Meckling, 1976). The value of the Managerial Power perspective, however, is that it highlights the unintended consequences of using these two mechanisms to manage the agency relationship. As indicated by the second governance dimension in Exhibit 2.2, Managerial Power Theory does this by drawing attention to the dynamic psycho-political relationship between board members and executives, particularly as a means of explaining observed reward-performance decoupling and rent-extraction. In integrative terms, these may best be thought of as secondary agency problems that can be

best addressed through *internal* governance practices to increase board control over the incumbent CEO. As shown in Exhibit 2.2, however, these theoretical perspectives still leave unacknowledged the relationship involved in a third and no less important dimension of corporate governance, namely that between external shareholders and the board.

Exhibit 2.2 An Integrated Approach to the Agency Relationship



What is being suggested here is that a rounded understanding of the nature of this third governance dimension requires the conjoint application of insights derived from both main theoretical perspectives. This dimension is the site of a set of tertiary agency problems to do with owner monitoring of, and influence over, the behaviour and decisions of board appointees. At the same time, this dimension is also the site of Managerial Power in that board members are themselves caught in a tug-of-influence between executives and outside owners.

Consistent with regulatory interventions designed to increase the role of 'independent' directors on company boards, a number of studies have examined the role of board composition as either an inhibitor and a facilitator of Managerial Power. Grabke-Rundell and Gomez-Mejia (2002) find that the shareholder influence over CEO reward is inversely related to the degree of CEO entrenchment on the company board. Entrenchment is said to

be greater where the CEO is also the board chairperson, where the board is comprised of more internal than external/‘independent’ directors, and where the CEO is her/himself an internal appointee with extensive corporate knowledge. In such situations, it is suggested, a CEO is able to neutralize board monitoring, dominate the flow of organizational information, and secure a large reward packet irrespective of firm performance. Yet here, too, the available research evidence remains inconclusive. Murphy (2002) and Conyon (2006) furnish evidence that boards and remuneration committees with more ‘interlocked’ or ‘affiliated’ directors - that is, non-independent directors who share one or more external board positions with the CEO - do not set more generous total reward levels, provide greater fixed reward or impose fewer performance-contingent rewards, and that externally hired CEOs with no ties to the existing board enjoy higher rather than lower reward levels.

In summary, both the Agency Theory and Managerial Power approaches identify several economic and structural factors that influence CEO reward, and the performance sensitivity of CEO reward. These literatures highlight the need to apply a model that incorporates i) board structural characteristics; ii) ownership characteristics; and iii) firm-level structural and market, and non-market contingencies. Chapter Four considers in detail the contours of just such a framework.

2.5 Conclusion

This chapter provides a critical overview of the two key theoretical perspectives that continue to inform research and practice in the field of CEO reward and performance. In evincing the precepts of Agency Theory, and the causal logic underpinning its predictions and prescriptions, it is argued that the approach oversimplifies the challenges and processes involved in the management of the agency relationship through CEO monitoring and reward. In particular, it is necessary to question the assumption that boards dutifully and unconditionally act in the interests of shareholders. Further, in its pursuit of more optimal contracting by increasing the *ex ante* sensitivity of reward to performance, Agency Theory oversimplifies the management of the agency relationship through CEO rewards. Agency Theory does not illuminate the complexities pertaining to the board’s management of CEO reward and performance. This is an important focus of discussion in the following chapter.

The current chapter also presents a critical examination of the Managerial Power model, and its attendant precepts, prescriptions and predictions. It is argued that, like Agency Theory,

the Managerial Power approach assumes wide shareholder dispersion and thus does not elucidate how large owners may moderate the reward-performance relationship, nor how they may influence internal corporate governance. Also, it is suggested that the Managerial Power approach overstates the prescriptive value of corporate governance practices that are designed to increase board structural independence. It is quite conceivable that 'best practice' corporate governance initiatives aimed at increasing board structural independence may have been ineffective in controlling growth in CEO rewards and rendering such rewards more performance-sensitive. Removing CEOs from remuneration and nominations committees, and proscribing CEO-chair duality may not have insulated boards from CEO influence; rather, as Westphal (1998) suggests, the pursuit of board 'independence' may simply have encouraged CEOs to pursue more insidious forms of interpersonal control over board directors.

This chapter outlines a preliminary means of synthesising the key insights afforded by both main theoretical perspectives. It is suggested that Agency Theory elucidates the principal/agent relationship, whereas the Managerial Power approach focuses on the relationship between the CEO and the board, and the psycho-political forces that influence this relationship. It is also suggested that the relationship between external shareholders and the board needs to be theorised and researched with greater precision. This theoretical synthesis is intended to frame and evince the causal logic underpinning the research predictions made in the forthcoming chapter. Building on the theoretical overview that this chapter provides, the following chapter canvasses the existing CEO reward and performance empirical literature.

Chapter Three

Existing Evidence on CEO Reward and Performance

3.1 Introduction

The previous chapter offered a critical examination of the key theoretical frameworks and concepts that have hitherto informed our understanding of CEO reward and performance, and discussed their theoretical limitations. This chapter aims to critically examine the extant empirical treatment and evidence on CEO reward and performance. In addition, studies examining the determinants of CEO reward level, composition, and performance sensitivity will also be analysed.

The chapter first considers the conventional approach to the model specification, and parameter estimation of the CEO reward and performance relationship, and the underlying methodological assumptions. It then examines the existing empirical evidence on CEO reward and performance, before turning to research that examines determinants of CEO reward. Finally, the chapter attempts to synthesise the existing evidence with a view to establishing a more solid foundation on which to develop knowledge on CEO reward and performance.

3.2 The Empirical Treatment of Agency Theory

The conventional approach to model specification and parameter estimation of CEO reward and performance is informed by the underlying Agency Theory postulates. According to this model, boards can control agent opportunism and risk and effort aversion primarily through the executive reward system (Eisenhardt, 1989; Fama, 1980; Jensen and Meckling, 1976). Agency Theory predicts that the board will control agent decisions, actions, and strategic choices in ways that serve the interests of shareholders, through executive incentive contracts. This logic has also percolated into empirical research, where there have been a large number of studies examining the sensitivity of executive reward to measures of firm-level performance. The sensitivity of CEO reward to measures of market-return performance has been used to infer the reality of optimal contracting.

In interpreting the significance of CEO reward-performance estimates, a number of researchers have sought to support Agency Theory. For instance, Lippert and Porter suggest

that the sensitivity of CEO reward to performance signifies a firm's commitment to incentivising shareholder value creation (1997:127). Conyon and Sadler (2001: 145) further maintain that 'the magnitude of the beta coefficient (β) is interpreted as reflecting the operation of the principal-agent mechanism, with higher values of β suggesting closer alignment of owner and management interests'.

Jensen and Murphy, the precursors of the conventional approach to the model specification and parameter estimation of CEO reward and performance, defined reward-performance sensitivity as the dollar change in CEO wealth associated with a dollar change in the wealth of shareholders (1990: 227). This relationship is encapsulated in the following equation (Jensen and Murphy, 1990: 227):

$$\Delta(\text{CEO Wealth})_{i,t} = \beta_0 + \beta_1\Delta(\text{Shareholder Wealth})_{i,t} + \beta_2\Delta(\text{Shareholder Wealth})_{i,t-1} + e_t$$

Where $\Delta(\text{CEO Wealth})_{i,t}$ is the change in CEO reward for firm i in period t .

$\beta_1\Delta(\text{Shareholder Wealth})_{i,t}$ is the change in Shareholder wealth, which is measured as the inflation-adjusted return to stock in period t , multiplied by the market capitalisation in period $t-1$.

$\beta_2\Delta(\text{Shareholder Wealth})_{i,t-1}$ is a one year lag in the change in shareholder wealth.

$\beta_1 + \beta_2$ measure the change in CEO wealth for a two year consecutive change in shareholder wealth.

The parameters of this functional form are estimated through a first-differences fixed effects approach. Chapter Five provides a more detailed examination of this conventional approach to model specification and parameter estimation. It is noteworthy, however, that research espousing the Jensen and Murphy statistic, and slight variants of this statistic, are uncritical of the assumptions underpinning the functional form specified, measures of performance and reward used, and parameter estimation. Essentially, this approach perpetuates the vagaries attendant to estimating a lagged dynamic panel model through a first-differences approach to estimation (for a recent Australian example see Merhebi *et al.*, 2006). As we will see shortly, this research has conflated significant reward-performance sensitivity estimates with agent-principal alignment. While research examining CEO reward and performance has perpetuated the normative assumptions of Agency Theory, research operationalising the logic underpinning the Managerial Power thesis has been slow to develop. Nonetheless, this

theoretical perspective predicts that CEO rewards are decoupled from firm-level performance, and that the reward system reinforces board capture, rather than control.

3.3 Reward-for-Performance and Reward-without-Performance: The Evidence

Jensen and Murphy's influential 1990 study continues to inform research investigating the relationship between CEO reward and performance. They find that annual changes in CEO total reward, encompassing salary, short-term incentives (STIs), superannuation, and the present value of CEO stock options, increased US\$3.25 for every US\$1000 increase in shareholder wealth at the 0.01 level of significance. In addition, they find that their total measure of CEO reward yielded greater sensitivities than using a salary plus bonus measure. In the same study, these authors investigated the nuances of specific reward components by examining their relative sensitivity to changes in shareholder wealth (1990: 231). They reported that for every \$1000 increase in shareholder wealth, the value of CEO stock options increased by 14.5 cents, and resulted in a 1.35 cents increase in annual changes in CEO salary and bonus (1990: 233). Accordingly, they argue that stock options generate closer principal-agent alignment than do cash components (1990). The CEO's shareholdings also appeared to increase the sensitivity of reward to performance. Hall and Liebman (1998) report similar findings. However, these findings should by no means diminish the importance of performance-based CEO cash reward as an important performance incentive mechanism to be used in conjunction with fixed cash rewards. Lambert and Larcker (1987) suggest different components of CEO total reward may have different performance criteria. It may be the case that cash rewards are conditional on non-market performance criteria, thus serving as a complementary, rather than supplementary incentive mechanism. Also studies that have included the change in the value of executive stock options, in addition to CEO salary and bonus, still yield inconsistent findings.

Empirical studies in both the United States of America (USA) and the United Kingdom (UK), have provided some evidence in support of a positive relationship between CEO cash reward, and shareholder wealth or other corporate performance metrics. A number of studies have reported significant positive, but weak, relationships between CEO cash plus bonus, and market and accounting return measures (Conyon and Sadler, 2001; Core, Holthausen, and Larcker, 1999; Hall and Liebman, 1998; Lilling, 2006; Murphy, 2002; Perry and Zenner, 2001; Tevlin, 1996; Winfrey, 1994; Zhou, 2000). The results from these studies also indicate

that firm size had a consistent and robust positive effect in predicting annual changes in CEO reward.

Australian researchers have reported comparable CEO reward-performance sensitivity estimates. Using panel data for the 1990s, Merhebi, Swan, and Zhou (2006), reported a significant lagged positive association between changes in CEO reward, and annual stock returns. They find that CEO reward, measured by aggregating the annual change in the value of CEO shareholdings, as well as bonus and salary, increased AU\$1.82 for two consecutive AU\$1000 increases in shareholder wealth. They also reported significant positive reward-performance elasticity. They find that, on average, a CEO receives a 1.26% increase for a 10% increase in shareholder wealth. The authors conclude that these findings lend support to Agency Theory in its advocacy of CEO reward for performance. A study by Clarkson *et al.* (2005) arrives at a similar conclusion. The study examined the reward-performance sensitivity between 1998 and 2004, inclusive, across 48 listed companies. In pooled, first-differenced regressions spanning 336 company-years, salary, annual bonus, and the aggregation of these components, are found to be positively and significantly related to a one year lag in Return on Assets (ROA; the coefficients for these reward variables were 3.882, 2.658, and 6.906 respectively). Annual regression results indicated that from 2002 to 2004, firm performance, indexed by one-year lag in ROA, positively and significantly predicted salary at the .05 level. Performance was only significantly and positively related to annual bonus in 2004. Finally, regression coefficients were significantly positive for 2004 and 2003 for the total reward measure. Overall the results from annual regression models suggest that the relationship between CEO reward and performance appears to have strengthened between 1998 and 2004. Furthermore, some studies have shown that changes in accounting-return measures of firm performance can also explain variation in annual changes in CEO cash reward.

Other North American and UK studies report non-significant or, at best, marginally significant reward-performance coefficients despite modelling both market and accounting return performance measures (Coughlan and Schmidt, 1985; Gerhart and Milkovich, 1990; Tosi, Werner, Katz, and Gomez-Mejia, 2000; Weinburg, 1995). Kraft and Niederprum (1999) even reported a negative relationship between executive reward and Return on Equity (ROE). Inconsistent to Jensen and Murphy's (1990) findings, a UK study by Buck *et al.*, (2003) find that the presence of LTIP, operationalised as a dummy variable, reduces the

sensitivity of total reward to Total Shareholder Return (TSR). When equity-based long-term incentive plans (LTIPs) are excluded, a £1000 increase in shareholder wealth predicts a £1.81 increase in CEO wealth. However when LTIPs are included, CEOs receive an increase of £1.55 for every £1000 increase in shareholder wealth. These findings suggest that increasing the performance contingency of executive reward to performance through LTIPs, does not increase the *ex post* sensitivity of CEO wealth to shareholder wealth, and, contrary to Agency Theory, that the performance contingency of CEO rewards should not be conflated with agent-principal alignment. More generally, these results draw into question whether the reward-performance sensitivity estimates should be considered valid proxies of principal-agent alignment, a point to which we shall return shortly.

Several Australian studies furnish support for CEO reward performance insensitivity. Izan, Sidhu, and Taylor (1998), in a study of 99 firms covering the period 1987-1992, report several findings contrary to Agency Theory predictions and prescriptions. First, pooled analyses yielded statistically insignificant reward-performance coefficients. Second, first-differenced estimates were not significantly related to either ROA or ROE, but were instead related to operating profit after tax. Third, no significant lagged relationship is found between reward and performance. Finally, long-window analyses, examining the sensitivity of reward to performance over longer measurement intervals also yielded insignificant results. Despite operationalising an array of functional forms or models, these results suggest that the association between performance, and salary and bonus is either infinitesimal or non-existent. Similar Australian findings are reported by Defina, Harris, and Ramsey (1994), Craswell, Taylor, and Saywell, (1997), O'Neill and Iob, (1999) and Holland, Dowling and Innes. (2001). A recent descriptive study commissioned by the Australian Council of Superannuation Investors (ACSI) examined 10 of the highest paid CEOs from the ASX 100 cohort made two compelling findings. First, six out of the ten cases received increases in total reward (including LTIPs) despite underperforming relative to the S&P/ASX 100 index. Second, three cases which outperformed the index, reported increases in reward incommensurate to relative performance (ACSI, 2006: 24).

Managerial Power Theory and Agency Theory make different predictions about the sensitivity of CEO reward to performance and also offer divergent explanations. The Managerial Power perspective predicts a decoupling of CEO reward from performance. Weak or insensitive reward performance coefficients in the extant research can be explained

through notions of rent extraction, stealth compensation, and 'camouflage' (See Bebchuk and Fried, 2002; 2004). A number of studies lend credence to these suppositions in suggesting that CEOs can freely influence the management and control of CEO reward. Among them, Yermack's (1997) study finds that CEOs can influence the timing of their stock option plans. Aboody and Kasznick (2000) report similar findings. Similarly, Callaghan, Saly, and Subramanian (2004) report that the repricing of stock option plans coincided with stock price movements. An earlier study by Healy (1985) indicated that managers freely manipulate performance measures to serve their own interests.

These inconsistent findings and interpretations do little to clarify whether executive reward systems, on average, are sensitive to changes in shareholder wealth and/or firm-level performance. The evidence is thus equivocal regarding both the suppositions and predictions of normative Agency Theory, and the Managerial Power model's prediction of endemic rent-extraction. As such both sides can continue to claim legitimacy: the reported positive significant sensitivities lend credence to the Agency Theory postulates; negative or non-significant sensitivities appear to bolster the premises of the Managerial Power perspective.

Irrespective of whether research furnishes support for the Agency Theory prediction of reward for performance, or the Managerial Power prediction of reward without performance, a key contention of this thesis is that these research findings are conceivably by-products of misspecification of the function form to measure the relationship of CEO reward and performance, as well as identifying inappropriate parameter estimators. These problems are considered to limit the extent of legitimate inferences stemming from this research, and are the reason why this thesis specifies alternative functional forms and parameter estimators. This is a primary focus of the discussion in Chapter Five. For present purposes, it is sufficient to make note that studies that have investigated the cross-sectional variance in reward-performance using simple arithmetic ordinary least squares (OLS) pooled regressions, or the semi-elasticity of reward with regard to performance (for example Aboody, 1990; Coughlan and Schmidt, 1985; Iwan *et al.*, 1998) have substantial but unacknowledged limitations in terms of causal inference. Conversely, other studies have addressed this problem by specifying a lagged model of CEO reward and performance, and such a functional form is believed to be more attuned to the dynamic nature of executive

reward determination (Jensen and Murphy, 1990; Mishra, McConaughy and Gobeli, 2000; Merhebi *et al.*, 2006).

The predominant approach to estimating the parameters of lagged or static models of CEO reward and performance is the first-differenced or fixed effects approach. The benefit of this approach is that it promises to ‘... net out those (maybe unobservable) factors influencing the [sensitivity] relationship that remain [unchanged] over time’ (Gregg, Machin, and Szymanski, 1992: 5). As we shall see in Chapter Five the approaches to both model specification and parameter estimation entrenched in research are highly problematic, and this arguably constrains knowledge development in the area of CEO reward and performance.

As suggested above, some authors have sought to address the complexity of CEO reward determination by examining the effects of factors other than performance on the level and composition of CEO reward. Beatty and Zajac suggest that the theoretical specification of CEO reward and performance should recognise ‘...explicitly, the conflicts, tradeoffs, and substitution possibilities among incentives, monitoring, and risk bearing on organisations may have the greatest potential to advance our understanding of top executive compensation, ownership and corporate governance’ (1994: 333). However research has since tried to espouse this logic, but failed to formulate an integrative theoretical model of CEO reward and performance which fully explicates the effects of these factors on CEO reward decisions, in addition to specifying function forms which more accurately depict the decisional processes that moderate CEO rewards, and performance. This is the guiding supposition underpinning this thesis and its theoretical or propositional logic and research methods. Before explicating this propositional logic in detail, it is first appropriate to canvass the literature on which these propositions are based.

3.4 Determinants and Boundary Conditions of the CEO Reward and Performance Relationship

Recent research has highlighted that there are other factors besides performance and firm size that account for changes or cross-sectional variation in the composition and level of CEO cash reward (Bebchuk and Fried, 2002; Bebchuk and Fried, 2004; Boyd, 1994; Finkelstein and Hambrick, 1989; Lippert and Moore, 1994). Several studies have emerged which attempt to explain variation in CEO reward changes, levels, composition, and their

performance sensitivity. These studies perpetuate an organisational adaptation perspective in recognising that formulation of executive contracts is influenced by both the internal and external environment of an organisation (Chu, Hu, and Chu, 2006). Research examining the boundary conditions on the relationship between CEO reward and firm performance can be further classified in terms of: i) Firm-specific factors; ii) CEO-specific factors; iii) board governance factors; and iv) external ownership.

Reasonably robust evidence has been provided which suggests that in order to examine the *ceteris paribus* effects of performance on CEO reward, it is important to consider both contextual and firm-specific factors that may refract this relationship. The enquiry into CEO reward and performance can be reduced to two key approaches. The first approach examines the sensitivity of CEO reward to a specified firm-level performance measure. The second approach seeks to explain variation in CEO reward level and composition through corporate governance variables, CEO characteristics, ownership structures, firm size, and firm risk.

3.4.1 Firm-specific Factors

Firm-specific factors refer to firm structural and demographic characteristics, excluding ownership concentration. This includes factors such as firm size, firm risk, industry, and business life cycle, which have been *foci* of empirical research explaining variation in CEO reward changes, levels, and performance sensitivity.

Firm size

Empirical research has furnished equivocal and inconsistent evidence to support the relationship between executive rewards and corporate performance, yet very robust evidence in support of the explanatory power of firm size. Tosi *et al.*, (2000) reported that firm size accounted for variation in executive rewards above and beyond corporate performance. Several international studies have indicated that firm size had a consistent and robust positive effect on CEO reward level (Conyon and Sadler, 2001; Core, Holthausen, and Larcker, 1999; Hall and Liebman, 1998; Lilling, 2006; Murphy, 2002; Perry and Zenner, 2001; Tevlin, 1996). Turning to the Australian evidence, Merhebi *et al.* (2006:) find that for every 10% increase in firm revenue, there was a concomitant 2.74% increase in the level of annual CEO cash rewards.

In terms of the impact of firm size on reward composition, Lippert and Moore (1994) find that the level of CEO incentive of performance-based reward was negatively related to firm size. These authors explicated their findings on the basis that firm size proxies organisational complexity, which is considered to render the board's appraisal of CEO contribution to corporate performance highly problematic. Also implicit in these findings is the possibility that executives may have greater incentives to increase firm size than to promote the long-term efficiency of the firm. This proposition seems in keeping with the resurgence of merger and acquisition activity that has occurred in Australia in recent times.

Variance of the firm's performance

The empirical treatment of Agency Theory focuses disproportionately on the reward-performance relationship, despite the underlying postulate that agents are risk averse, and require fixed rewards alongside performance-contingent rewards to limit risk exposure (Jensen and Meckling, 1976). This assumption has prompted enquiry into the main and interaction effects of the variance of the firm's market returns on CEO rewards (Aggarwal and Samwick, 1999a; Beatty and Zajac, 1994; Core *et al.*, 1999; Lippert and Moore, 1994; Merhebi *et al.*, 2006 Mishra, McConaughy, and Gobeli, 2000). Furthermore, not accounting for the variance in performance in Agency Theory specifications may, in effect, cause the reward-performance sensitivity to be underestimated Aggarwal and Samwick (1999a: 84). The same authors argue that specifying the variance of the firm-level performance measure as an independent variable and interaction term results in larger reward-for-performance coefficients because their omission results in estimates by being absorbed into the error term (1999a: 77). Thus, controlling for risk mitigates the potential for omitted variable bias.

The empirical operationalisation of risk as a moderator of CEO reward and performance has yielded findings in support of principal-agent postulates examined in Chapter Two; in particular, that boards need to balance CEO risk bearing with performance incentives (Jensen and Meckling, 1976). Indeed, the research on the association between risk and reward has furnished some of the most valuable insights to emerge from recent Agency Theory research, especially in terms of explaining variation in CEO reward-for-performance. For instance, Aggarwal and Samwick (1999a) explain their findings in terms of a trade-off between incentives and agent-risk exposure, such that the level of incentive reward is a negative function of the variance of firm's performance. Hall and Liebman (1998) argue that lowering the 'sharing rate' (i.e. the incremental relationship between CEO reward and

shareholder gains) may provide a stronger incentive effect because a high sharing rate transfers undue compensation risk to agents to the point that they may avoid high net present value projects. Conyon and Sadler (2001) mount a similar argument.

Conversely, implicit in the Managerial Power perspective is the notion that agent risk-bearing, through results-based incentive contracts, is highly dubious. Bebchuk and Fried (2004) suggest that results-based incentive contracts precipitate further agency problems in the form of incentive distortion so that agents can hedge their risk exposure stemming from incentives (Bebchuk and Fried, 2004). Such behaviour may include the manipulation of performance standards, an apprehension to pursue high volatility projects with high returns, or to make research and development investments (Bloom and Milkovich, 1998). In addition to the absence of indexed options, there is often no downward adjustment to other compensation components, perpetuating 'no skin off my nose' and further agency costs (Murphy, 2002). In interviews conducted by Reilly and Scott (2005), members of remuneration committees admitted that CEOs are insulated from downside risk; such that poor firm performance does not precipitate downward adjustments in CEO reward. These findings thus contradict the Agency Theoretic notion of 'ex post settling up' where the board of directors is assumed to be diligent in ensuring that executive reward is symmetrically sensitive to performance, such that CEO reward is reduced when firm performance is poor (Fama, 1980).

Either way, assuming that these considerations come to bear on the design and management of executive reward, we would expect, by extension, that increases in the variance of firm's performance would weaken the relationship between CEO rewards and performance. Empirical research sensitivity furnishes additional support for this argument. In a study of 1,500 firms in the US over the period 1993 to 1996 inclusive, Aggarwal and Samwick (1999a) provide robust evidence that CEO cash reward for performance is a negative function of variance in firm returns (specified as the cumulative distribution function of variance in stock returns). It is found that CEOs with the least variance in the firm's stock returns earn an additional US\$27.60 for every US\$1000 increase in the firm's stock returns. At the median variance in the sample, a CEO received an additional US\$14.55 for a US\$1000 increase in firm's stock returns. At the maximum variance, and thus the highest level of risk exposure, CEO wealth increases US\$1.45 for a US\$1000 increase in stock returns. When risk is omitted, the median CEO reward for performance is US\$12.26 for a

US\$1000 increase in stock returns. Bloom and Milkovich (1998), Core *et al.* (1999) report similar findings. A study by Merhebi *et al.*, (2006), furnish Australian evidence to support the inverse relationship between firm risk and CEO reward-performance sensitivity. A study by Mishra *et al.* (2000) suggest that the relationship between changes in CEO and shareholder wealth is curvilinear given that agents are undiversified and risk averse. Stronger reward for performance is found to exist at low levels of firm risk, but weakens as risk increases. This may be explained in terms of agents negotiating higher levels of risk compensation to offset or minimise their risk exposure when firm risk is high. From this point onwards, firm risk will be used to refer to the variance of firm returns, unless indicated otherwise.

Industry

Researchers have also noted significant differences in the level and composition of CEO reward as a function of industry sectors. Using non-parametric analyses, Cordiero and others (2006) report considerable variation within and across industries in terms of the number of firms that exhibited high reward concurrently with high levels of growth and stock returns. It is suggested that:

“Compensation committees might... well rely on different specifications of the CEO compensation relationship to size and performance, since different industries are subject to different operating environments, political pressure, external regulation, growth rates, competition, and risks.” (Cordiero *et al.*, 2006: 244)

Thus reward decisions may reflect the circumstances that are unique to different industry sectors (Cordiero *et al.*, 2006). As with the effects of firm risk examined above, industry may also be an important moderator of the relationship between CEO reward and performance. In his study of 120 firms over the period 1977-1981, Decktop (1988: 223) reports that industry significantly influences the effect of profit, sales, and market equity value on CEO reward. He also suggests (1988) that industry acts as a proxy for the influence of on the external labour market on executive reward. As such, market salary survey data can be used to inform reward level and composition decisions so that rewards are comparable or better than industry peers to attract and retain talented executives.

Business cycle

The business life cycle of a firm may also influence reward mix and, hence, total reward level (Ellig, 2003). Growth and start-up firms may require lower fixed labour costs and, as such, may have to rely more heavily on incentive reward than do more mature organisations (Gerhart and Rynes, 2003). Chu *et al.* (2003) find that, along with industry sector, the business cycle affects the level of incentive reward, such that in early phases of development, firms tend to rely more heavily on incentives to motivate. In terms of performance evaluation, Lambert and Larcker (1987) find that 'growth' firms place greater importance on market measures relative to accounting measures, on the basis that accounting measures are less sensitive to agent decisions and actions in the current performance period. Hall and Murphy (2002) also report that high growth firms are more likely to issue stock option plans rather than restricted stock plans.

External consultants

The Managerial Power perspective attributes the decoupling of CEO reward and performance partly to the influence of reward consultants on board outlook and decision-making. According to Bebchuk and Fried (2004), reward consultants can interfere with optimal contracting by providing market data that ratchets up the level of CEO reward, and by crafting reward plans that obscure rent-extraction. Research from the UK suggests that the CEO plays an active role in the selection of compensation consultants (Reilly and Scott, 2005). In interviews with 21 remuneration committee members, Reilly and Scott (2005) report that 88% of participants reported that reward consultants work directly with CEOs, and that frequently the consulting firm will have pre-existing contracts with the CEO for other areas of business, and thus creates a normative obligation to comply with the CEOs compensation preferences. Indeed, Baker *et al.* (1988) argue that the comparative survey data frequently used by consultants to inform reward policies has a 'ratcheting up' effect over time, as reward levels are often set above the market median. This is also corroborated by Reilly and Scott (2005), who interviewed 21 remuneration committee directors, 77% of whom agreed that the systematic 'ratcheting up' of executive reward can be attributed to setting reward levels to the 75th percentile.

Coffee (2006) also raises further issues relating to the influence of external consultants on CEO reward and performance by maintaining that, given their lack of company-specific information, 'independent' directors, may allow professional gatekeepers – that is, reward

consultants who may have a vested interest in being conciliatory to the CEO - to have undue influence over board decisions regarding reward proposals and recommendations.

3.4.2 CEO Demographic Factors

Human capital arguments are often advanced to explain variation in executive reward levels, and tradeoffs between performance incentives and retention and attraction incentives. The functional background of the CEO, past work experiences and achievements, and whether they are an internal or external appointment, can have significant effects on CEO reward level and composition. For instance, Finkelstein and Hambrick, (1989) find that appointed externally CEOs are paid premiums so that they leave their current firms, and internally appointed CEOs are likely to accept lower levels of reward compared to external appointees (for further research see Decktop, 1988; and Lilling, 2006).

Tenure

There is a high level of divergence in research findings regarding the relationship between CEO tenure and CEO reward and performance. For example, using USA data Lippert and Porter (1997) report that tenure negatively moderates the relationship between CEO cash and performance, but positively predicts the total level of CEO cash reward. Conversely, Lilling (2006) finds that the relationship between tenure and CEO total reward was significantly negative in the UK. To add to these inconsistencies, Finkelstein and Hambrick's (1989) study reports an inverted U-shape relationship between tenure and total cash reward sensitivity. As tenure increases, retention payments created by high levels of performance insensitive cash diminish in importance, especially because tenure may be an index of reduced labour mobility (Finkelstein and Hambrick, 1989).

The extant Managerial Power literature has a tendency to operationalise tenure as an index of board capture, which is premised on the notion that the CEO's power strengthens as length of service increases (Finkelstein and Hambrick, 1989). The longer CEO remains with the firm, the more the incumbent CEO accumulates trust that in turn displaces the need for incentive contracts (Gomez-Mejia and Wiseman, 1997). However, from these disparate empirical findings, it remains unclear what effect tenure has on the board's decisions pertaining to CEO reward and performance.

CEO equity ownership

Several interesting findings have emerged in research examining the effects of CEO ownership in the firm, on reward level and composition on the one hand and its mediating or moderating effects on reward for performance on the other hand.

To recapitulate, according to Agency Theory, CEO ownership automatically induces agent-principal alignment (Fama and Jensen, 1983). Consistent with this logic, research indicates that the pre-existing incentives attendant to agent share ownership can spur a trade-off between agent shareholdings and performance contingent cash rewards, on the basis that shareholdings serve as a substitute agent-principal alignment mechanism (Canyon and Sadler, 2001). In short, CEOs with large equity holdings are rewarded for corporate performance through their shareholdings on top of what he or she receives in cash rewards (Finkelstein and Hambrick, 1989: 123). Beatty and Zajac (1994) further suggest that agents' equity holdings will determine their willingness to accept additional compensation risk stemming from increases in incentive reward.

In addition to these findings, research also suggests that CEO ownership in the firm is a significant moderator of the CEO reward and performance relationship. For instance, Lippert and Porter (1997) provide preliminary support for a positive association between equity holdings and reward-performance sensitivity. However, Tevlin (1996) reports that sensitivity is 0.55 higher when the CEO is not a major shareholder. Lambert and Larcker (1987) also report that the performance measures the board uses - particularly the relative weight placed on accounting and market based measures - in evaluating agent actions are contingent on the fraction of CEO ownership in the firm.

Other studies report a consistent inverse relationship between CEO ownership and the level of CEO total cash rewards. Core *et al.* (1999) find that UK CEO equity holdings are negatively related to the CEO reward level, such that a 1% increase in CEO equity decreases of total reward of \$8,027. In their study of the USA leisure industry, Finkelstein and Hambrick (1989) report a U-shaped relationship between a CEO's equity holdings and salary such that beyond a point, salary level actually declined (1989: 129). These results have important implications for composite reward measures by suggesting that while they are helpful for approximating total rewards, they obscure important nuances in reward

design and composition and, in particular, the tradeoffs and substitutions among specific reward components, in this case cash and equity-based components. This in turn has implications for the model specification of CEO reward and performance, which will be discussed in Chapter Five.

CEO stock options

While some commentators argue that options and related equity instruments are equally effective means of aligning principal and agent interests, according to advocates of Agency Theory and Managerial Power Theory alike, option plans also have considerable potential for incentive distortion and rent extraction. Option plans are said to shield the executive from down-side risk, to encourage speculation in the company's shares, to invite manipulation of market intelligence and insider trading, to dilute external shareholder wealth, and to carry hidden costs for the firm (Shields, 2007:496). Option plans are also susceptible to a range of other risk-avoidance actions, including repricing, up-loading and automatic conversion (Pollock, Fischer and Wade, 2002). For these reasons, it may be that powerful owners view options and related equity instruments less favourably than they do direct share ownership. To Murphy (2002), a prominent Agency Theorist, the enthusiasm that boards in the USA have shown for option plans, is based on the mistaken belief that options are a low-cost form of reward.

3.4.3 Corporate Governance Regulation and Board Governance

In recent years there has been a surge of research investigating the relationships between corporate governance and corporate performance. Recent Australian evidence suggests that a range of board governance practices were uncorrelated with corporate performance. For instance, Kiel and Nicholson (2003) report that a range of board structural measures were uncorrelated with corporate performance.

It is noted in Chapter Two that both Agency Theory and Managerial Power Theory imply that performance-insensitive executive reward is an artefact of poor board governance structures. Both perspectives further assume that board structural arrangements affect the level of discretion internal managers can have over the management of their reward and performance. Fama and Jensen (1983) suggest that board composition affects board monitoring effectiveness, and overall the management of principal-agent alignment. In particular, having a large proportion of 'outside' directors on the board was posited 'to

enhance the management of the relationship between CEO reward and performance. This appears to be the assumption underling both recent research in the field and mandatory and voluntary codes of corporate governance 'best practice' since both have centred chiefly on board composition. Increasing board 'independence' has become almost an axiomatic corporate governance prescription to improve director monitoring and behavioural evaluation of CEOs. Corporate governance reforms and regulatory codes introduced in Australia and elsewhere since the 1980s not only prescribe performance-contingent rewards but also a stronger presence by 'outside' directors to enhance board monitoring. However, from a board stewardship perspective, having a larger proportion of inside directors is purported to enhance board task performance because executive directors are more specialised in the firm's daily operations (Donaldson and Davis, 1991). Arguably, however, the notion of stewardship offers very little scope for evincing the impact of board composition on the management and control of executive reward decisions.

Several empirical studies have investigated the relationship between board composition, particularly the ratio of outside directors to inside directors, and the level and composition of CEO reward (See Dalton *et al.*, 1998 for a meta-analysis). Board composition is assumed, *a priori*, to influence the board's effectiveness in monitoring and rewarding executive-agents. The research also construes board governance practices as indices of board 'capture' and inversely, board 'independence' (see Dalton *et al.*, 1998).

In the light of these general points, we can now turn to examining the available research findings on the relationship between variations of board composition and CEO reward. This evidence addresses three main facets of board structure: i) overall board composition; ii) board committee presence and composition; and iii) the status of the board chair.

Evidence on board-level composition

The evidence on the main and moderating effects of board-level composition is at best, very mixed. Some studies provide support for the proposition that those boards with higher proportions of 'outside directors' are associated with more optimal and thus performance-contingent CEO reward outcomes. For example, Finkelstein and Hambrick (1989) found that board composition had differential effects on CEO reward level and composition. These authors reported an inverse relationship between the proportion of outside directors on the board and the level on CEO salary plus bonus, yet a positive association between the

proportion of outside directors on the board the performance contingency of reward. These findings are seemingly consonant with Agency Theory predictions and 'best practice' prescriptions. In the Australian context Kiel and Nicholson (2003) offer some evidence supportive of the 'best practice' formula. They find that having a greater number of 'outside' directors on the board was positively associated with an alternate market value measure, Tobin's Q³. Conversely, other studies show that board composition does not bear a systematic relationship with other measures of company performance (see Daily *et al.*, 1998; Core *et al.*, 1999).

Consistent with Stewardship Theory (See Donaldson and Davis, 1991), several criticisms have been levelled against having large proportions of outside directors on the board. The first criticism levelled at increasing board structural independence is that 'outside' directors can be 'interlocked' with the CEO (non-independent directors who share one or more external board positions with the CEO); that is, the CEO may serve as a director on the board in which the outside director is chairperson or CEO. In this case, both CEOs may feel a normative obligation to be conciliatory to each other's compensation desires. The empirical evidence lends some support to this proposition. For example, Core *et al.* (1999: 388) demonstrate that a 1% increase in the proportion of interlocked directors leads to a \$7,356 increase in CEO total reward Westphal and Zajac (1997) also question the assumption that board composition can institutionalise board structural independence and control. Utilising an institutional theory perspective, they argue that reward practices and corporate governance practices can be diffused through board interlocks, and thus nominally 'independent' or 'outside' directors make reward decisions on the basis of practices within their own firms. Their results suggest that the proportion of performance-contingent rewards decreased as the proportion of directors who were CEOs of other companies increased. The same authors also found associations in the composition of reward between the CEO and 'outside' CEO-directors. Further empirical evidence of the ineffectiveness of board structural independence to curb growth in CEO rewards, is provided by Conyon and Peck (1998).

³ The authors calculated Tobin Q=market value of common stock + the book value of preferred stock + the book value of long-term stock/the book value of total assets (2003: 197).

Further, Westphal (1998) reports that higher levels of outside directors at the board level are associated with greater use of interpersonal tactics by the CEO to maintain compliance from board directors. Westphal (1998) provides evidence that increasing the structural power of the board through either splitting the role of CEO and chair, or increasing the ratio of independent or outside directors to internal-executive directors, increases the level of CEO ingratiation and persuasion behaviour which, in turn, reduces the level of performance contingent reward while increasing the level of total reward. By implication, a positive relationship between structural independence and the level of total reward must be interpreted with caution, and is perhaps explicable in terms of the CEO substituting structural power with interpersonal influence. Consistent with this evidence, the proportion of inside directors is found to be inversely related to total cash reward, which seems to indicate that, if anything, insiders may be more effective in structuring economically optimal contracts (Ueng, Wells, and Lily, 2000). A study by Core *et al.* (1999:385) also corroborates this finding. Results from regression analyses show that a 1% increase in the percentage of inside directors on the board translates into a \$5,639 decrease in reward.

The third criticism levelled at 'outside' director monitoring effectiveness is that their putative independence is also hampered by the fact that the CEO is typically responsible for their reappointment and selection, which is itself a potential source of Managerial Power (Bebchuk and Fried, 2002 and 2004; Fama and Jensen, 1983; Reilly and Scott, 2005). In this situation it is in the director's interests to acquiesce in the CEO's wishes rather than engage in reward activism. Consistent with this proposition, 'outside' directors may have a normative obligation to be more accommodating to the incumbent's compensation preferences. These authors suggest that CEOs tend to appoint directors demographically similar to themselves as a way to minimise the likelihood of dissent and reward activism. In corroboration of this proposition, Core *et al.* (1999: 387) demonstrate that a one member increase in outside directors appointed by the CEO leads to a \$4,137 increase in total reward. If the CEO holds the balance of power, they tend to select directors demographically similar to themselves, and as canvassed above, the proportion of CEO-selected directors is positively related to total reward, but negatively related to the level of incentive reward (Westphal and Zajac, 1995). Qualitative research also appears to corroborate these findings. In interviews conducted by Perkins and Hendry (2005) nominally independent directors in the UK admitted they are inclined to accept recommendations pertaining to executive rewards that are made by the top management team itself.

On the basis of these inconsistent findings, it is unclear from research whether 'outside' directors are more capable of exercising independent judgement in relation to CEO reward determination.

Evidence on committee-level composition

The normative discourse on board governance best practice advocates the formation of independent task-specific committees, dominated by outside directors, to enhance board monitoring and decision-making. Some studies examine the effects of board composition at the committee level on CEO reward and performance (for an example, see Core *et al.*, 1999). Intuitively the focus is on nomination and remuneration committees.

Research lends very little credence to the institutional suppositions underlying corporate governance best practice prescriptions. Murphy (2002) and Conyon (2006) furnish evidence that boards and remuneration committees with more 'interlocked' or 'affiliated' directors - that is, non-independent directors who share one or more external board positions with the CEO, or who are CEOs themselves - do not set more generous total reward levels, provide greater fixed reward or impose fewer performance-contingent rewards, and that externally hired CEOs with no ties to the existing board enjoy higher rather than lower reward levels.

Recent qualitative research from the UK furnishes support for the proposition that independent board committees are also susceptible to normative pressures to be compliant rather than independent (Perkins and Hendry, 2005). Non-executive members of the remuneration committees interviewed reported their concerns regarding the ambiguities inherent in discharging their role on the board. They admitted to being torn between serving shareholding interests, on the one hand, and maintaining reward satisfaction amongst prominent executive directors, on the other. These interviewees also conceded that reward activism targeted at the CEO's package is eschewed on the basis that it erodes camaraderie on the board. Together, research by Murphy (2002) and Conyon (2006), indicate that boards and remuneration committees with more 'interlocked' or 'affiliated' directors; i) do not set more generous total reward levels, ii) do not provide greater fixed reward, iii) nor impose fewer performance-contingent rewards.

Other studies challenge the claimed worth of having independent or non-executive director dominated remuneration committees. Conyon and Peck's (1998) findings suggest that the

corporate governance best practice of having independent remuneration committees does not militate against high levels of CEO reward, and may not provide the board with incentives to structure optimal contracts. Daily and others (1998) report similar findings. Their US study demonstrates that there is no systematic relationship between CEO rewards and the presence of either non-executive directors or affiliated directors and CEOs themselves on the remuneration committee. In sum, the research evidence on the efficacy of having an independent or non-independent formal remuneration committee is extremely mixed.

Evidence on the status of the board chair

There has been considerable debate over the efficacy of having outside director chairpersons instead of CEO-chairpersons – or CEO-chair ‘duality’ - from a CEO reward and performance management perspective. Research and theory has generally focused on the impacts of board leadership on board governance practice in general. Research is lacking on what specific effect board leadership practices may have on CEO reward and performance management.

From a stewardship perspective, having dual roles enhances board effectiveness because of the CEO’s specialised knowledge (Donaldson and Davis, 1991). Conversely, from a principal-agent perspective, duality can be eschewed on the basis that decision control and management needs to be clearly demarcated (Fama and Jensen, 1983).

With regard to what influence CEO-chairpersons might have on board governance practices, evidence suggests that dual role holders can have substantial control over board appointments, and re-appointments. CEO-appointed directors, from a Managerial Power perspective, can become beholden to the CEO and may tend to err on the side of the CEO (Bebchuk and Fried, 2002). In support of this, Wespahl and Zajac (1995) report that the CEO holds the balance of power when they select directors demographically similar to themselves. They also find that the proportion of CEO-selected directors is positively related to total CEO reward but negatively related to the level of incentive reward; this conceivably both supports and challenges the prescriptions of the Agency Theory. Interviews conducted by Reilly and Scott (2005) indicate that UK CEO-chairpersons are commonly appointed as directors to the remuneration committee (2005:36). A recent Corporate Board Survey in the USA also corroborates this finding, where 28% of non-executive directors reported that

having an ‘independent’ chair was likely to have a small effect on reducing the level of CEO reward (Lawler and Finegold, 2007).

This evidence seems to question the level of ‘control’ that boards have in managing and controlling CEO reward and performance. The paucity of empirical research on the impact of the duality of these roles on CEO rewards makes it difficult to infer the prescriptive validity of separating the two roles. As we shall see, the results reported in this study indicate that the predictive effects of having a non-executive director board chairperson are non-significant, and thus neither support nor challenge the separation of these roles.

Evidence on board size

There is also considerable divergence in the empirical and theoretical literature about the impact of board size on corporate performance, and CEO rewards. Some studies indicate that the size of the board limits its effectiveness in pursuing optimal contracting. According to Core *et al.* (1999: 387) a one member increase in board size is associated with a \$30,601 increase in total reward.

In contrast, a meta-analysis by Dalton and others (1998) reports a positive relationship between board size and firm performance. This is consistent with the notion that board size may have important implications for board task performance. Kiel and Nicholson (2003) also find firm size to be positively associated with board size, greater proportion of non-executive directors, and the separation of CEO and board chair roles. However, no significant association is reported between board size and corporate performance.

These findings are significant for our purposes in that they suggest that board demographics have implications for board task performance. Yet the same evidence is of limited value in terms of evincing whether board size enhances the board’s effectiveness in managing the agency relationship through rewards, a point that is explored further below.

Outside director ownership

Core *et al.* (1999), provide some evidence that stock ownership of outside directors may create incentives to challenge the CEO in terms of reward, and may serve to neutralise CEO entrenchment and attendant pressures for compliance. Specifically, Core and others (1999: 387) demonstrate that for a 1% increase in the percentage of stock owned by outside

directors, total CEO reward decreases by \$21,183. In confirmatory factor analysis, Boyd (1994) report that aggregate stock ownership by board members positively loads on board control.

In summary, the evidence on the effects of board composition at the chair, board, and committee level are at best equivocal. It remains unclear whether board governance codes of best practice serve to enhance the board's management of CEO reward and performance. Some explanations relating to this are provided in Chapter Ten in light of the results reported in this study.

3.4.4 External Ownership

Bloom and Milkovich (1998) contend that the degree of control that owners have over CEO reward varies from firm to firm, with the presence of one or more large external shareholders conferring greater principal control (that is, an 'owner-controlled' firm) and the absence of a large external shareholder conferring weaker principal control (or a 'manager-controlled' firm). The concentration of external ownership may, indeed, act as a countervailing force to Managerial Power, and, hence, to its ascribed consequences: rent-extraction, and incentive distortion. In firms where ownership is widely dispersed, individual owners may not possess the expertise and corporate knowledge to evaluate the executive team and incumbent CEO; nor, as individuals, will they possess sufficient market power to have much influence on either market perceptions or firm governance. However, this may not be true of large external 'block holders', whether they happen to be wealthy individuals or large institutional investors, such as pension/superannuation funds. They have the power to influence both market perception and board composition.

Ownership concentration may thus impose psychological constraints on rent-extraction and the level of performance-decoupled rewards. Outrage - or potential outrage - from these large principals may act to curb rent extraction and thus reward without performance. Managerial Power theorists suggest that agents will be less inclined to pursue rent extraction when they believe that their actions may provoke concerted shareholder outrage, especially where the principals concerned hold large blocks of the firm's equity. Accordingly, ownership concentration may serve to tighten the outrage constraint against, firstly, the decoupling of reward from performance and, secondly, the payment of sub-optimal (i.e. unnecessarily high) levels of total reward. Consistent with the theoretical and empirical

literature, it can be hypothesised that ownership concentration will constrain the level of stealth compensation, and performance-decoupled cash rewards. To support these propositions, Tosi and Gomez-Mejia (1989) surveyed 175 chief compensation officers, and reported that 'owner controlled' firms, characterised by an external block holder owning 5% or more of the company's stock; have higher levels of incentive alignment in executive contracts than those firms that are 'managerially controlled'. Yet, Tevlin (1996) finds that firms with low ownership concentration had a sensitivity parameter that was 0.35 higher than highly concentrated firms (1996: 44). She maintains that incentive contracts act as a substitute for monitoring such that the more dispersed external ownership, the higher the reward-performance sensitivity.

In summary, there have been a number of studies that indicate that firm-level factors other than performance can influence CEO reward changes, levels, and performance sensitivity. These findings have important implications for both the theoretical specification and empirical estimation of the CEO reward and performance relationship.

Overall, the existing findings of reward for performance research, together with research examining the impacts of CEO and firm specific factors, and corporate governance on CEO rewards, carry discordant messages in relation to the predictive validity of Agency Theory and Managerial Power postulates, as well as the efficacy of the best practice governance prescriptions that rest on one or both of these conceptual frameworks. If there is one thing that this literature does confirm, it is that the management of the agency relationship is more complex than the literature acknowledges, and that an understanding of the predictors and outcomes of CEO reward decisions will be enhanced by recognising that the efficacy of Agency Theory and Managerial Power prescriptions for managing the agency relationship may be context-specific rather than universal.

3.5 Conclusion

Returning to the conceptual treatment of CEO reward and performance, Chapter Two identifies two key theoretical frameworks, and provides a critical overview of their assumptions and attendant prescriptive validity. The two frameworks advance similar solutions to CEO excess and pay without performance.

Agency Theory recommends that boards should consist of a large proportion of 'outside' directors (See Eisenhardt, 1989). Agency theorists do, however, imply that the board has a stewardship role to monitor agents, and to use incentives to manage problems attendant to the separation of ownership and control. The Managerial Power perspective recognises the possibility of CEO entrenchment which may prevent that board from determining CEO rewards at arm's length and by default, that the board effectiveness to monitor agents and provide them with incentives can be impaired (Bebchuk and Fried, 2004). A point of difference between these two approaches is that the Managerial Power perspective is more explicit in suggesting that stealth compensation and incentive distortion are symptomatic of suboptimal board structural configurations that foster CEO entrenchment. Therefore, both theoretical perspectives consider board structural characteristics to be important boundary conditions for CEO pay for performance, and for controlling the growth in CEO pay. As we will soon see in Chapter Four, this institutional logic has become the edifice of corporate governance best practice, even though it remains to be empirically untested. Despite these caveats, increasing the performance-contingency of CEO rewards, as well as increasing the structural independence of the board, continues to be the locus or object of corporate governance codes and best practice principles.

In conjunction with Chapter Two, this chapter provides a critical overview of both the empirical and theoretical literature pertaining to CEO reward and performance. It can be argued, however, that the prescriptions of both models rest on the *a priori* assumption that the board has the *capability* (as compared to the *obligation*) to manage CEO reward and performance on the basis of objective judgment and strategic choice. It is this proposition that constitutes the pivotal point of departure for this thesis. The universal assumption of board capability is arguably hampering knowledge development and research rigor by detracting attention from the board decisional processes which moderate CEO reward and performance. Research surveyed above, examining the determinants of CEO reward, has failed to convincingly and comprehensively elucidate how firm-specific, CEO-specific, external ownership and board governance practice influence the CEO reward and performance relationship.

As such, the extant research corroborates neither Agency Theory nor Managerial Power explanations nor prescriptions in any conclusive manner. Upon closer examination, it is difficult to ascertain how each of the two leading conceptual approaches identified above, by

themselves, is capable of advancing our understanding of CEO reward and performance much further. Reward for performance can be used to infer board diligence to manage the agency relationship by constraining managerial power, and making CEO rewards more performance contingent. Similarly, reward performance insensitivity can be taken as indirectly lending credence to the Managerial Power model and to infer persistent board 'capture' and poor board governance. Furthermore, we are left to reconcile the discrepancy between theory, and the empirical inconsistencies evident in extant CEO reward and performance sensitivity research. The only certainty evident in the empirical literature is that size continues to explain variation in CEO rewards.

The methodological isomorphism evident in extant research examining the sensitivity of CEO reward to performance adds another layer of complexity to this story. This chapter provided a brief examination of some of the methodological limitations of the conventional approach to estimating and specifying the relationship between CEO reward and performance that were examined. The overarching argument presented is that the empirical inconsistencies in CEO reward and performance sensitivity research may be methodologically driven.

To this end, this thesis seeks to examine the association between CEO cash reward and performance, in addition to empirically testing the institutional supposition this relationship is bounded to board structural characteristics. To manage the validity of inferences drawn from these analyses, this thesis uses a system GMM approach to dynamic panel model estimation; an approach discussed further in Chapter Five. Such an approach necessarily challenges the continued preoccupation with board structural configurations as mechanisms to optimise the board's management of CEO reward and performance.

To facilitate these research objectives, the following chapter – Chapter Four - presents an hypothesised structural and economic model of CEO cash reward. The purpose of Chapter Four is twofold. First, it attempts to integrate extant theory, research examining the association between CEO reward and performance, along with corporate governance regulation. The second purpose is to present and explain the research hypotheses tested in this thesis.

Chapter Four

An Hypothesised Economic and Structural Model of CEO Cash Determination

4.1 Introduction

The critical reviews of the existing research and theoretical perspectives on CEO reward and performance provided in Chapters Two and Three, suggest that the debate on CEO reward and performance has been localised to economic and structural models. A number of criticisms were made regarding the validity of the dominant conceptualisation, empirical specification, and estimation of the relationship between CEO reward and performance. It is argued that both theory and research neglects the complexities of board decision-making processes underlying CEO cash reward. It is also argued that the extant empirical evidence is equivocal on the relationship between CEO reward and performance, as well as on the factors that moderate this relationship. Theory and research has consequently failed to contribute to an enhanced understanding of CEO reward and performance to any great extent. The structural independence of the board continues to be the locus or object of corporate governance codes and best practice principles.

To promote a better understanding of CEO reward and performance, this chapter presents an hypothesised structural and economic model of CEO cash reward explicates its embedded causal and propositional logic. The model integrates the key suppositions underpinning Agency Theory and Managerial Power literatures that continue to inform corporate governance prescriptions in Australia, the USA, and the UK. It also incorporates insights from the empirical literature examining various structural and economic factors that can influence CEO reward.

To this end, this chapter firstly elucidates how the extant theoretical perspectives on CEO reward and performance can be integrated for the purpose of developing an integrative economic and structural model of CEO reward and performance. Economic and structural factors in the hypothesised model include: i) firm characteristics, ii) ownership characteristics, and iii) board characteristics. Subsequent sections then explain how factors posited in the model can potentially impact on and moderate the relationship between CEO cash rewards and performance.

4.2 Integrating Extant Theory

Following the critiques of Agency Theory and the Managerial Power perspective, there is a need for a more comprehensive and integrative framework for understanding how factors derived from extant research and theory exert influence on CEO reward outcomes. While attempts have been made to integrate extant theory and research, the insights provided are largely descriptive (Chu, Hu, and Chu, 2006; Devers *et al.*, 2007; Finkelstein, 1992; Finkelstein and Hambrick, 1988; Gomez-Mejia and Wiseman, 1997; Zajac and Westphal, 1995).

In order to build on and advance existing theory and research on CEO reward and performance management, we need to first integrate and synthesise key postulates and prescriptions underpinning both Agency Theory, and the Managerial Power perspective.

The critical review of these two perspectives in Chapter Two revealed that the synergies between the two approaches have been overlooked. Both perspectives pose two pivotal assumptions. First, they assume that a board of directors can potentially act in the interests of the CEO, above and beyond principal-shareholders when ratifying proposals put forward by management for board approval (Fama, 1980). The second assumption is that board structural characteristics can enable the board to be more critical and analytical when judging the efficacy of management-initiated proposals, especially those concerning CEO reward.

Exhibit 4.1 provides a schematic and integrative model of both Agency Theory and Managerial Power prescriptions for optimising the board's management of CEO reward. According to the diagram, the key actors in the determination and management of CEO reward and performance include the board of directors, the shareholders, and the CEO. The prescriptions proffered by both theoretical perspectives are targeted at enhancing and positively moderating the alignment of interests between the shareholders and the board, or the CEO and the shareholders.

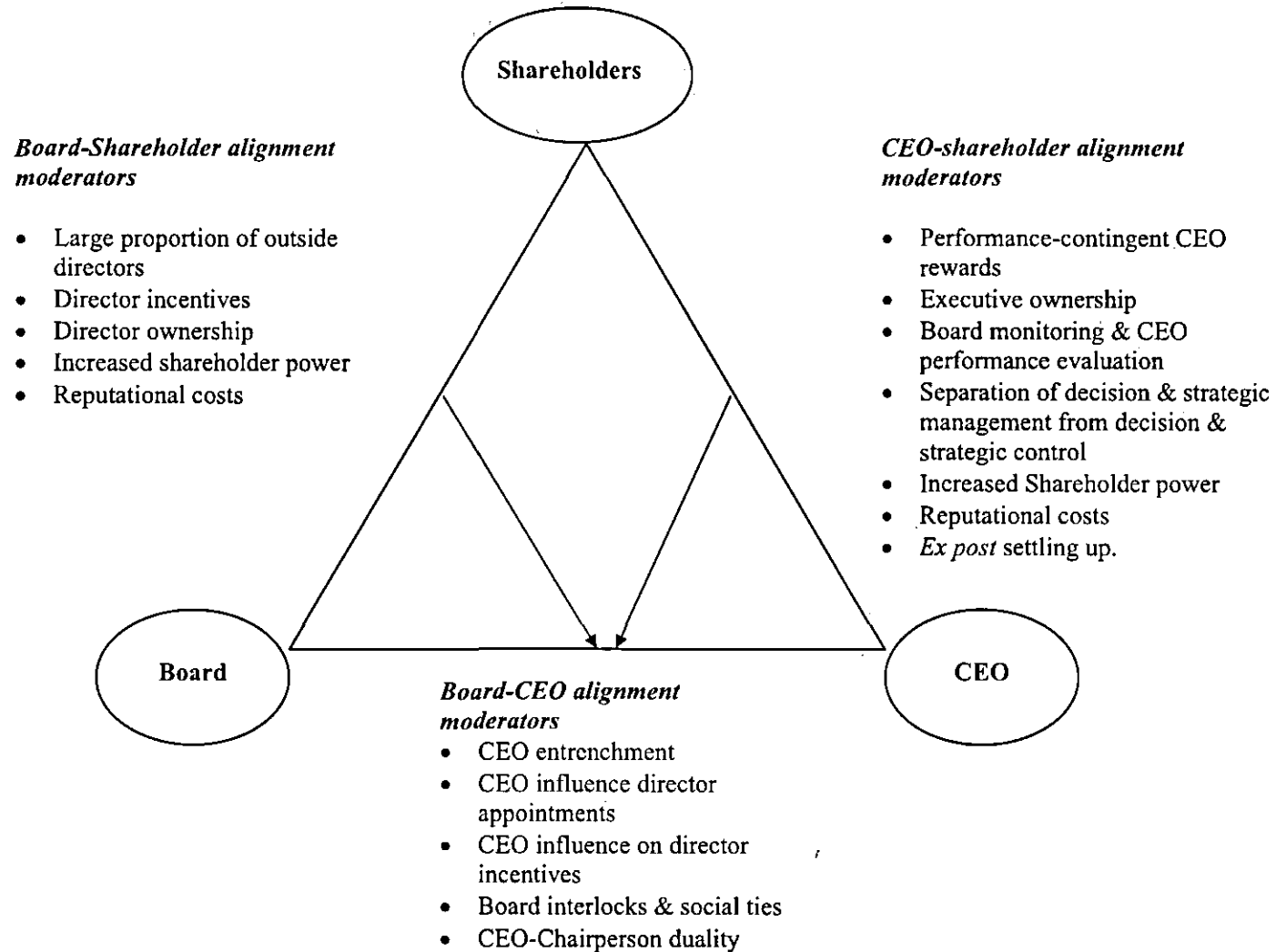
The various mechanisms proposed in the literature that are said to align the interests of the CEO and shareholders include: executive ownership (Eisenhardt, 1989); the use of performance-based reward; board direct monitoring and control of CEO task performance

(Fama and Jensen, 1983); the board's appraisal of CEO task performance (Fama and Jensen, 1983); and enhancing shareholder power (Bebchuk and Fried, 2004).

Further, mechanisms to enhance the alignment of interests between the board of directors and shareholders include: director incentives and share ownership (Bebchuk and Fried, 2004); external share ownership, board leadership, large numbers of outside directors (Eisenhardt, 1989); the potential for shareholder outrage (Bebchuk and Fried, 2004); and the presence of board task specific committees (see Cadbury, 2002).

In Exhibit 4.1, the arrows inside the triangle indicate that such mechanisms are assumed to remove structures and socio-political forces that prevent the board from optimising CEO reward outcomes. They also act to preclude the CEO from influencing the management and administration of CEO reward. Consistent with Agency Theory, the Managerial Power perspective assumes that board structural arrangements and institutional forces can render the board more efficient in monitoring the CEO and evaluating and ratifying CEO reward proposals.

Exhibit 4.1 An Integrative Model of the Mechanisms to Align the Interests of Shareholders and Agents



Both Agency Theory and Managerial Power Theory assume that under the ‘right’ conditions, boards have an economic and rational orientation to the decision-making process. Under the ‘wrong’ conditions, socio-political forces preclude the board’s economic orientation to the management of CEO reward and performance. Managerial Power Theory assumes that unless there are structural constraints on CEO entrenchment, boards will determine CEO cash reward on the basis of a psychosocial imperative to be conciliatory to the CEO (Bebchuk and Fried, 2004). This bias toward the CEO may preclude the director from constructively evaluating a proposal for the purpose of managing CEO cash reward and performance. However, the efficacy of board structural prescriptions advanced by these theories remains empirically untested. It remains unclear whether board structural arrangements, prescribed by these theories, necessarily optimise CEO reward outcomes and the relationship between CEO reward and performance.

4.3 An Hypothesised Economic and Structural Model of CEO Cash Reward and Performance.

The Agency Theory literature delineates various firm, ownership, and board characteristics that can influence the level, composition, and performance sensitivity of CEO reward (See Aggarwal and Samwick, 1999a; Hall and Liebman, 1998; Kerr and Kren, 1992). Exhibit 4.2 merely describes the structural and economic determinants of CEO cash reward. The following subsections explore on the basis of existing theory and research, how these firm, ownership, and board characteristics can influence CEO reward outcomes. Such a discussion explores how these factors can influence board strategic choices relating to the level, composition, and performance sensitivity of cash reward. On the basis of extant research and theory, it is reasonable to propose the following.

Proposition 1: While CEO reported CEO cash rewards may be sensitive to firm performance it is unlikely to be exclusively contingent on firm performance.

The broad logic encapsulated in the proposed theoretical system prompts research to explore the direct and moderating effects of a range of firm, ownership, and board characteristics on CEO cash reward level, composition, and the *ex post* sensitivity of these rewards to measures of firm performance. Based on existing research and theory, Exhibit 4.2 outlines the firm, ownership, and board structural characteristics posited in extant theory and research, to influence CEO cash reward, as well as their treatment of these determinants in subsequent

chapters. Our purpose here is to examine the extent to which these factors influence and explain variation in the CEO cash reward, and also the extent to which they moderate the association between CEO cash reward and measures of firm-level performance.

4.4 Determinants of CEO Reward and Performance

4.4.1 Firm characteristics and CEO Cash Reward

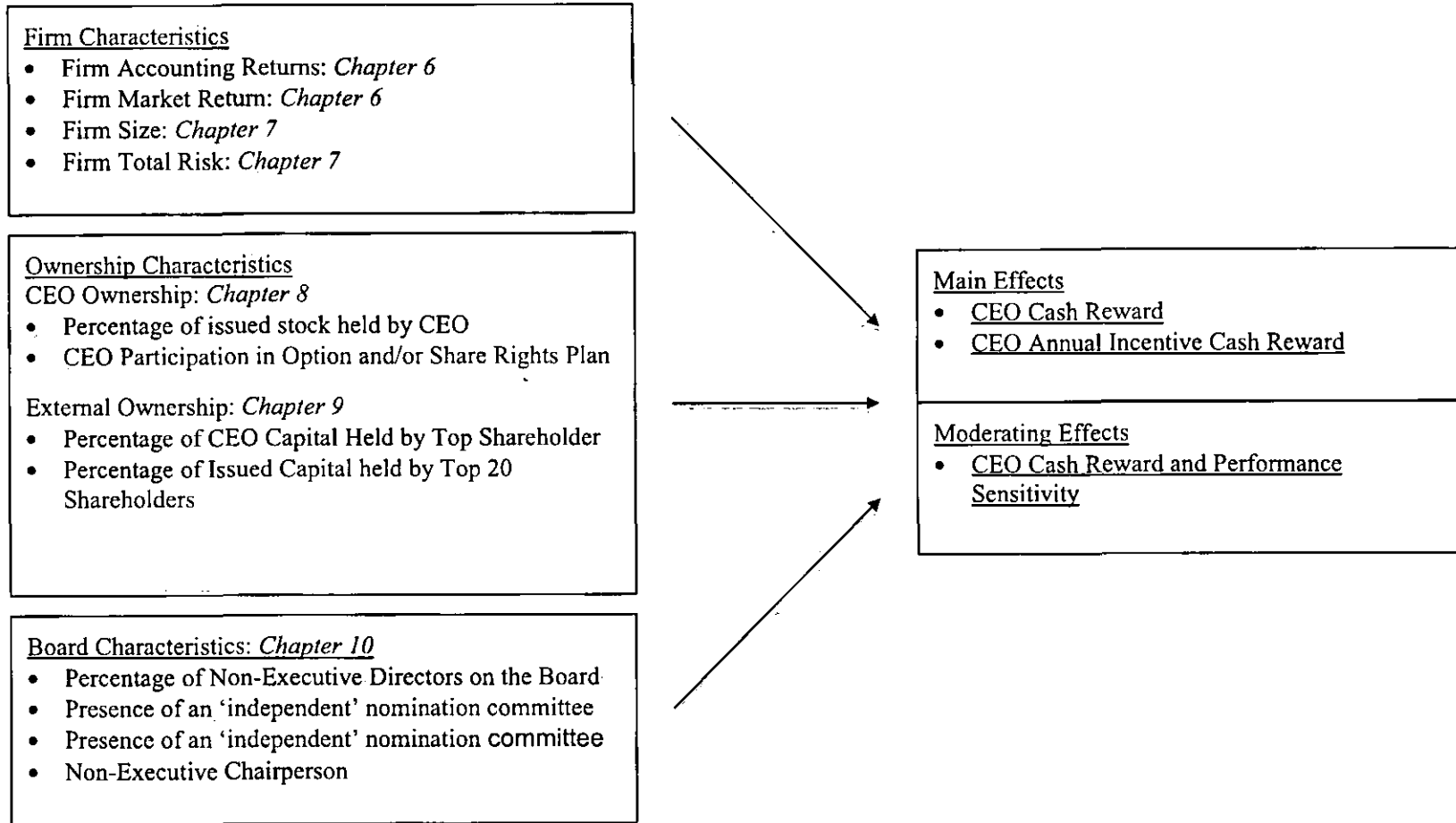
Performance

It is important that the empirical and theoretical specification of CEO reward and performance account for the practical and human realities of board decisions pertaining to the design of performance incentive cash plans. In particular, there is a need to account for the possibility of cash reward levels being determined against multiple measures of firm performance (see Ellig, 2003 for an example). Contrary to Lambert and Larcker's suppositions, in some cases, there may not be tradeoffs between accounting and market return measures, especially where cash incentive plans specify multiple performance measures, and have concomitant awards determined according to a multiple-measure matrix (see Ellig, 2003, for an example).

Proposition 2a: CEO total cash reward is positively associated with lagged and/or contemporaneous accounting and/or market return performance

Proposition 2b: CEO annual cash reward is positively associated with lagged and/or contemporaneous accounting and/or market return performance

Exhibit 4.2. An Hypothesised Economic and Structural Model of CEO Cash Reward and Performance



Firm Size

Previous studies have shown that firm size also plays an important role in the management and determination of CEO rewards. Tosi and others (2000) report that firm size accounted for 40% of the explained variance in CEO total reward, whereas firm-level performance explained less than 5%. Some authors explain this in terms of firm size being a proxy of firm complexity; more specifically operational, financial, and strategic complexity from diversification, internationalisation and greater resources (Finkelstein and Hambrick, 1989; Lippert and Moore, 1994). They argue that this warrants greater levels of fixed rewards to attract and retain CEO talent. The literature also suggests that firm risk or high-variance in firm returns may have the same effects as firm size in attenuating the sensitivity of firm-level performance to CEO decisions and actions.

The performance insensitivity and magnitude of CEO pay have also been justified in terms of job characteristics. Following this line of logic, some commentators suggest that CEO pay serves as a compensatory mechanism and suggest that the job [of the CEO] has become increasingly 'difficult and less pleasant' (Kaplan, 2008: 6). Henderson and Fredrickson (1996) rationalise trends in CEO pay on the premise that CEOs need to be compensated for the information-processing demands attendant to the position. Finkelstein and Hambrick (1988) also suggest that high CEO rewards are explained more simply through organisational size, where CEOs who manage large firms are required to manage greater resources (1988: 549). Indeed, the size, the internationalisation, and diversification of firms have become indices of CEO task complexity (Gabaix and Landier, 2008), indeed there is robust empirical support suggesting the size predicts CEO pay (See Tosi et al, 2002).

Proposition 3: Firm size is positively associated with CEO total cash, and annual incentive-cash reward.

Firm Risk

Consistent with Agency Theory, performance insensitivity is also explained in terms of managing CEO risk bearing. According to a behavioural model of Agency Theory, risk bearing refers to the agent's perceived risk taking, and the potential for loss of wealth (Larraza-Kintina, Wiseman *et al.*, 2007; Wiseman and Gomez-Mejia, 1998). Larraza-Kintina *et al.*, (2007: 1002) suggest that agent risk bearing is a positive function of the agent's perceived employment risk, and second, the agent's perceived compensation risk or the

unpredictability of future earnings. Zajac and Westphal (1994: 121) show that there are 'diminishing behavioural returns' associated with higher levels of incentive reward in firms where there is a high variance in stock returns. They also suggest that firms with complex corporate strategies face diminishing 'behavioural returns' to increases in monitoring. Aggarwal and Samwick imply that in order for the board of directors to account for agent risk-bearing in the management of the relationship between reward and performance, they would necessarily have to examine the variance of the performance measure (1999a: 77). In turn, the observed high variance of firm performance may require that the agent receive additional fixed reward or a risk premium to dissuade them from leaving the company (Lambert and Larcker, 1987). Similarly, Hall and Liebman (1998) argue that lowering the 'sharing rate' (i.e. the incremental relationship between CEO reward and shareholder gains) may provide a stronger incentive effect because a high sharing rate transfers undue compensation risk to agents to the point that they may avoid high net present value projects (see also Conyon and Sadler, 2001).

The principal-agent model assumes that the board needs to balance agent-risk exposure with agent incentives. By implication, agents exposed to high levels of firm risk can be expected to receive lower levels of incentive reward (Fama, 1980; Jensen and Meckling, 1976). Consistent with this logic, several studies have found that stock volatility, a source of firm risk, negatively moderates the relationship between CEO rewards and firm-level performance (Aggarwal and Samwick, 1999a; Beatty and Zajac, 1994; Core *et al.*, 1999; Lippert and Moore, 1994; Merhebi *et al.*, 2006; Mishra, McConaughy, and Gobeli, 2000).

They suggest that in order to improve board attributions regarding the CEO's individual contribution to firm-level performance, boards may examine the volatility of the performance criterion specified in the plan, in addition to relative performance to 'net out' error in attributing firm-performance to the CEO. Consistent with Lambert and Larcker (1987), the model is premised on the assumption that firm-level performance is ostensibly an imperfect measure of CEO performance.

For instance, it is difficult to discern from firm-level performance measurement the extent to which such outcomes are attributable to CEO behaviour (Lambert and Larcker, 1987). This, by extension, creates the possibility that CEOs may be rewarded not for random noise in the performance measure, rather than their own actions. This limits the extent to which valid

inferences can be drawn about the CEO's performance. At the very least, we should expect to find a significant relationship between reported performance contingent rewards and lagged firm performance measures. Where we find a disassociation between reported performance-based cash rewards and recent firm-level performance, it is fair to deduce that boards have been ineffectual in terms of providing rewards commensurate with lagged performance.

Proposition 4a: Firm risk is positively associated with CEO total cash reward.

Proposition 4b: Firm risk is negatively associated with CEO annual incentive cash reward.

4.4.2 Ownership and CEO Cash Reward

CEO Ownership

Our theoretical model specifies these two forms of CEO ownership as determinants of CEO cash reward. However, the model is neutral in terms of predicting what impact these two different forms of CEO equity participation have on the level and composition of CEO cash rewards as well as their moderating effects on the relationship between these reward measures and firm-level performance.

An added complexity here is that different types of CEO equity participation may have differential incentive and risk effects on the CEO (Bryan, Hwang, and Lilien, 2000; Sanders, 2001). For this reason, we distinguish between asymmetric and symmetric risk by using as proxies option or share rights plan participation and equity ownership respectively. It is conceivable, then, that boards may also place differential importance on stock ownership compared to stock option participation (see Bryan, *et al.*, 2000). It is for this reason that this thesis does test hypotheses regarding the directionality of the association between CEO ownership and CEO cash reward.

Agency Theory recognises the importance of taking CEO risk preferences into account when managing CEO reward and performance (Jensen and Meckling, 1976). Agency Theory suggests CEO share ownership, by default, provides the agent with incentives to promote market return. CEO equity ownership thus exposes the CEO to risk that is identical to that experienced by shareholders (Sanders, 2001). By extension, it is reasonable to predict that CEO ownership may moderate the relationship between CEO cash reward and firm-level performance in two ways. First, consistent with Lambert and Larcker's (1987) insights, CEO

ownership can prompt tradeoffs between different performance measures, as well as tradeoffs between different reward components, in an attempt to balance agent risk and incentives. Further, boards may be more inclined to condition CEO cash reward on measures of accounting-return performance when CEO share ownership is higher. Second, and consistent with Agency Theory, CEOs with higher levels of CEO share ownership do not require additional performance incentives through CEO cash rewards, and thus would be expected to receive lower levels of performance-based cash, relative to fixed cash reward (See Tevlin, 1996).

Proposition 5a: The percentage of issued capital held by the CEO is associated with CEO total cash and annual incentive cash reward.

Proposition 5b: CEO participation in a stock option and/or share rights plan is associated with CEO total cash and annual incentive cash reward.

External Ownership

As canvassed in Chapter Three, the extant empirical research suggests that external ownership concentration may be an important basis for CEO cash reward and performance deliberations. Studies reporting positive moderating effects on the reward-performance relationship (Hartzell and Starks, 2003) and negative main effects of CEO reward levels lend credence to the proposition that concentrated shareholders may provide the board with greater incentives to structure more optimal CEO rewards. Especially where CEO cash reward sensitivity to firm-level performance is considered to demonstrate the board's commitment to managing the agency relationship (Abowd, 1990). Consequently, external ownership concentration may provide the board with greater incentives to increase the performance contingency of CEO cash rewards.

In the Australian regulatory context, external shareholders can influence executive reward decisions through non-binding shareholder resolutions. Thus shareholders and ownership structure can impact on the board's management and control of CEO reward and performance.

Accordingly, based on the logic that agents will be less inclined to pursue rent extraction when they believe that their actions may provoke concerted shareholder outrage (Bebchuk

and Fried, 2004), both research and theory suggest that ownership may act to buttress board effectiveness. This is the case especially where the principals concerned hold large blocks of the firm's equity. The extant literature suggests that ownership concentration may serve to tighten the outrage constraint and, in turn, militate against the decoupling of reward from performance and, secondly, leads to the payment of sub-optimal (i.e. unnecessarily high) reward levels.

It is also possible that in some contexts tradeoffs may occur between performance contingent rewards and the degree of equity dispersion. Tevlin (1996) provides evidence that performance-contingent cash rewards may substitute for direct monitoring by large external block holders, a possibility to be considered further in the next chapter. Thus, external ownership may be important *foci* in board deliberations pertaining to the control and decision management of CEO cash reward and performance. Our model proposes that external ownership may also influence both board governance practices and the board's ability and willingness to exercise strategic choice and objective judgment in their efforts to manage CEO reward and performance. It is plausible that boards may be more strongly motivated to act objectively where they perceive the need to appease large visible external block holders. It may also be the case that having large external block holders precipitates more strategic choices and more diligent decision-making processes pertaining to CEO reward and performance, and by extension more diligent monitoring and valid reliable measurement of CEO performance. Equally, it is possible that a board may decide to make less use of incentive contracts where block holders prefer to monitor the CEO directly.

Proposition 6a: The percentage of issued capital held by top shareholders is negatively associated with CEO total cash reward.

Proposition 6b: The percentage of issued capital held by top shareholders is positively associated with CEO annual incentive cash reward.

4.4.3 Board Characteristics and CEO Cash Reward, and Corporate Governance

Recent corporate governance reforms in the Australian context have sought to increase board efficiency in managing executive reward and performance. The theoretical model specified accommodates or recognises that Australian listed company boards have institutional pressures to manage CEO reward in certain ways, and also to practice board governance in

particular ways – in accordance with ‘best practice’ requirements. Thus the model casts corporate governance regulation and best practice rhetoric as both a determinant of Board Governance practice and a moderator of CEO cash reward and performance.

On the basis of past research, the model assumes that board governance practice can have differential effects on the board’s management of CEO reward and performance. Thus according to the model, corporate governance regulation and rhetoric can potentially impact on CEO cash reward and performance in two ways. First, these institutional pressures can be a focal point of board deliberations when structuring CEO cash reward. Second, these interventions can directly influence board governance practice. However, as suggested, the effects of subscribing to board governance codes of best practice may not necessarily translate into more optimal CEO cash reward and performance outcomes.

Before explicating these implications from a CEO reward and performance management perspective, a definition of corporate governance is in order.

This thesis adopts the definition of corporate governance developed by The ASX Corporate Governance Council (2003). Corporate governance is described as

“... the system by which companies are directed and managed . . . [which] influences how objectives of the company are set and achieved, how risk is monitored and assessed, and how performance is optimised.” (2003: 3)

The past decade has seen a rapid development in corporate governance prescriptions and ‘best practice’ codes. This paper will use a definition suggested by Huse (2007, 181) that corporate governance codes of best practice are ‘sets of that best-practice recommendations regarding the structure and behaviour of boards’. These codes are intended to enhance board task performance in general, and especially the board’s ability to make effective decisions. Huse (2007) cites examples of codes of corporate governance best practice as well as corporate governance regulation in UK and USA. In aggregate, these reports, codes, and statutes have furthered a normative model of corporate governance, which has implications for board composition, leadership, diligence and accountabilities, as well as transparency in board decision-making.

Corporate governance interventions are considered to improve board effectiveness through their implicit mechanisms, structures and processes. Overall, these interventions are considered to impact on: i) board accountabilities; ii) board governance; and iii) board decision and strategic control. Codes of best practice, by definition, are purported to enhance board decision-making abilities and judgements. The implicit mechanisms or throughputs to facilitate improvements in board task performance more generally include board governance practice, which encompasses board structural characteristics and board composition at the board, committee and chair level, and disclosure requirements. These mechanisms are considered to enhance overall board task performance by: i) accountability and task requirements; ii) diligence and prudence; and iii) optimising the executive reward system.

Yet it is possible that boards may subscribe to board governance and CEO reward practices simply as a matter of regulatory compliance. As such, these prescriptions may present as ends in themselves rather than as means to any higher purpose. That is, boards that comply with these prescriptions may simply be assumed to be more effective monitors, diligent and prudent decision makers, and thus more effective in procuring CEO incentives through the CEO reward system.

For our purposes, the key question is whether and to what extent such requirements and prescriptions stand to enhance the board's effectiveness in specific areas of board task performance such as the management of the CEO reward and performance relationship? In addressing this question, it is helpful at the outset to examine the specific *foci* of these interventions in terms of board task domain, the mechanisms posited to enable enhance board task performance, and their purported outcomes.

Towards this end, we will now consider briefly the specific implications of Australian corporate governance interventions and their impacts of CEO cash reward and performance.

In 1998, the Australian *Corporations Law* and Australian Accounting Board Standards (1046) mandated an embryonic form of disclosure of the remuneration of the highest paid company officers. Publicly listed companies were required to outline, in a formal remuneration report appended to the company's annual report, the underlying remuneration policy for company officers, the policy's relationship to the company's performance and a reporting of the total CEO reward of the company's five highest paid officers in a disaggregated form (base salary,

superannuation, benefits, cash bonuses, termination payments, etc.) (see s. 300A of Schedule 1 of the *Company Law Review Act 1998*, which is now the same section of the *Corporations Act 2001*). In 2004, the enactment of the CLERP9 reform recommendations amended that section to further detail the remuneration disclosure requirements (see Schedule 5 of the *Corporate Law Economic Reform Program (Audit Reform and Corporate Disclosure) Act 2004*). The 2004 amendment specifically requires the reporting of the 'fair values' of new option grants (ss. 300A(1)(e)(ii)-(vi) of the *Corporations Act 2001*). These reforms thus require boards to rigorously disclose CEO rewards, by detailing the constitutive components of the highest paid company officers (see s. 300A(1)(c) of the *Corporations Act 2001* and reg. 2M.3.03 of the *Corporations Regulations 2001*) and by disclosing the performance conditions and criteria used to determine CEO rewards (see s. 300A(1)(ba)). These targeted interventions are intended to provide boards with stronger incentives to increase the performance contingency of CEO reward. The additional requirement of a non-binding shareholder vote on the remuneration report provides the board with additional incentives to structure more fair and reasonable CEO reward packages (including termination payments), as well as director rewards (see s. 250R of the *Corporations Act 2001*).

Thus, Australian boards have to comply not only with a raft of CEO reward disclosure requirements, they are also required to respond to institutional pressures to engender board governance codes of best practice. The ASX Corporate Governance Council (2003), provide a number of recommendations pertaining to, inter alia, board composition and governance practices. Recommendation 2.1 prescribes that boards should have a larger proportion of 'independent', rather than non-independent directors, on the board. The rationale for this is that independent directors are considered to be in a better position to act in the interests of the company and to exercise 'independent judgment' in order to 'to promote ethical and responsible decision making' (2003: 19). The ASX Council of Good Governance define an 'independent' non-executive director as someone who is

“... independent of management and free of any business or other relationship that could materially interfere with – or could reasonably be perceived to materially interfere with- the exercise of their unfettered and independent judgment.” (ASX Principles of Good Governance, Recommendation 2.1, 2003: 19)

OECD principles endorse this logic by suggesting that independent directors are likely to be more adept at exercising independent judgement. They also help ensure proper compliance with committee charters (OECD, 2004: 25).

According to the prescriptions implicit in the *ASX Principles of Good Governance (2003)*, 'independence' at the chair, board, and remuneration and nomination committee level can improve the board's ability to manage the relationship between CEO cash rewards and performance in three ways. Boards subscribing to these principles are considered to have the ability to exercise objective judgments and strategic choice when making decisions in general, be better placed to procure effective CEO incentives and make 'fair and 'appropriate' CEO cash reward decisions and to 'encourage enhanced' performance. Recommendations 2.2 and 2.4 prescribe that boards have independent non-executive chairpersons at the board and nomination and remuneration committee levels. Having an independent chairperson at the committee and board level is considered to enhance board leadership. In particular, having predominantly independent directors on the remuneration and nomination committees is considered to increase the board's ability to exercise objective and effective judgments regarding corporate governance practice, board appointments and executive appointments. These practices are purported to improve the board's ability to 'encourage enhanced performance' (ASX Principles of Good Governance, Principle 8, 2003: 47) and to 'remunerate fairly and responsibly' (ASX Principles of Good Governance, Principle 9, 2003: 51).

In large measure, such interventions have the intention of militating against board capture. Board capture is said to be greater when the CEO is also the board chairperson, when the board is comprised of more internally-recruited than externally-sourced directors and when the CEO is an internal appointee with extensive corporate knowledge. In such situations, it is suggested, a CEO is able to neutralize board monitoring, dominate the flow of organisational information and secure a large pay packet irrespective of firm performance. The Cadbury report (1992, cited in Cadbury, 2002) in the United Kingdom (UK) recommended separating the board chairperson and CEO roles to buttress board leadership. Thus, separating the two roles (Recommendation 2.3 ASX Principles of Good Corporate Governance, 2003) and having a non-executive chair have come to be regarded as key elements of 'best practice' corporate governance. Consistent with the Managerial Power approach, separating the roles is purported to reduce a board's susceptibility to managerial self-interest, and improve their

effectiveness to structure optimal contracts by curbing growth in the level of performance-insensitive CEO reward.

Corporate governance regulation has also sought to enhance board task performance by stipulating more rigorous annual reporting and executive reward disclosure requirements. This increased transparency is assumed to enhance board leadership and accountability and provide greater incentives for the board to enhance the alignment between executive incentives and firm-level performance (See ASX Principles of Good Governance, 2003). For example, increased CEO reward disclosure requirements, along with shareholder resolutions on CEO rewards, may motivate the board to make cash rewards more performance contingent and sensitive to shareholder returns, while at the same time controlling the growth in CEO rewards.

Rather than test these decisional processes directly, this thesis tests their outcomes. For our purposes, the key question is whether and to what extent such requirements and prescriptions stand to enhance the board's effectiveness in specific areas of board task performance such as the management of the CEO reward and performance relationship?

Proposition 7a: Board 'independence' at the board chair, board, and committee level is negatively associated with CEO total cash reward.

Proposition 7b: Board 'independence' at the board chair, board, and committee level is negatively associated with CEO annual cash reward.

Proposition 8a: The presence of a non-executive dominated remuneration or a nomination committee is negatively associated with CEO total cash reward.

Proposition 8a: The presence of a non-executive dominated remuneration or a nomination committee is negatively associated with CEO annual incentive cash reward.

A necessary caveat to be made here, however, is that corporate governance structures purported to improve board effectiveness to make optimal reward decisions that are independent of managerial influence, may in actuality, not precipitate optimal decisions and may be instead more tokenistic. Thus, in this thesis, board effectiveness is conceptually

distinct to optimal corporate governance structures and board structural independence. It is hoped that this thesis and the model presented will ultimately test the empirical validity and efficacy of board structural independence and 'best' practice corporate governance structures to improve the board's effectiveness to structure optimal rewards.

The ideal of director 'independence' has assumed virtually uncontested status in current governance theory and practice and is routinely taken as a key indicator of board decision and strategic control capabilities. However, it remains unclear from research evidence whether these prescriptions *are* improving the board's management and control of CEO cash reward and performance. Indeed, as noted in Chapter Three, there is no empirical evidence that 'independence' at the board and committee level has facilitated material improvements in board task performance.

Bebchuk and Fried's (2004) exposition of 'camouflage' suggests that disclosure requirements do not necessarily optimise CEO cash reward decisions or the accuracy of the reporting of those decisions. It is also conceivable that governance reforms provide impetus for 'coercive isomorphism' (Bender, 2004; Bender and Moir, 2006). Thus on the basis of these considerations, it seems plausible to suggest that boards may mimic reward practices of peer companies as a means to retain and attract CEO talent, while also feeling pressure to conform to regulatory impositions in an attempt to manage potential media and shareholder outrage (see Zajac and Westphal, 1995 for evidence). In essence, board governance practices encompass the informal and formal processes and norms that affect board task performance.

Board governance practices aimed at institutionalising board 'independence' may not be sufficient for enhancing the board's control and management of CEO rewards and incentives. This is notwithstanding the degree to which the board's structure conforms to best practice governance prescriptions. Board 'independence' at the committee, chair and board level should not be conflated with board competence to manage and control CEO cash reward and performance on the basis on strategic choice and due diligence.

Accordingly, this thesis tests whether the diffusion of board governance best practice principles has precipitated material changes in the board's management of CEO reward and performance. It is conceivable that the board's adherence to the best practice prescriptions may be merely perfunctory or tokenistic. By themselves, board structures are not necessarily

instrumental in increasing the board's effectiveness to manage the agency relationship. Research investigating the link between board demographics and corporate performance in the Australian context by Kiel and Nicholson (2003) provides evidence to support this supposition. They found that a range of board governance measures were uncorrelated with corporate performance.

4.5 Conclusion

The integrative model presented in this chapter elucidates the economic and structural determinants of CEO cash reward identified in extant theory and research., and presents a series of research hypotheses. Building on these points, the next chapter considers how theoretical model of CEO cash reward and performance management presented in this chapter can enable the more rigorous specification and estimation of the reward determination process. It will also facilitate richer and more precise research inferences regarding the management and control of CEO cash reward and performance from a board decision-making perspective.

Chapter Five

Research Method and Model Specification and Estimation

5.1 Introduction

The review of existing research on CEO reward and performance in Chapter Three notes several methodological limitations in existing approaches. In response to these shortcomings, this chapter presents a rationale for shifting to systems - or an identified multi-equation - approach to the model specification and parameter estimation of CEO reward and performance relationship. A secondary aim of this chapter is to describe the methods for data collection, data management and analysis used in this study. We turn our attention firstly to why aggregate statistical analysis was considered the most appropriate method for advancing our existing understanding of CEO reward and performance management.

5.2 Research Method

This study takes a more considered and systematic approach to the theoretical specification, model specification, and parameter estimation of CEO reward and performance management compared to the extant theory and research. One of the most important criticisms levelled at the existing research, especially recent research conducted in the Australian context, is that the specification and estimation of CEO reward and performance has several limitations which essentially bias the estimates generated. It is argued in Chapter Three that the Jensen and Murphy (1990) statistic remains an entrenched method for examining the relationship between CEO reward and performance despite its susceptibility to a range of sources of contamination, most notably autoregressive processes stemming from the complex error structure of a dynamic panel model.

Anastasi (1976) alluded to the importance of synchronising the theoretical specification of a causal relationship (in this case reference was made to the relationship between motivation and performance) with the empirical specification, and the estimation of this relationship. Ostrom (1990) concurs with this strategy. Berry also indicates that this is an appropriate strategy for optimising the validity of model specification and, in turn, parameter estimation (1993: 67).

The extant empirical literature is contaminated by specification error in this regard, especially in that it does not accord due consideration to, inter alia, autocorrelation and exogeneity. This will be further discussed in the forthcoming sections comparing different approaches to parameter estimation. In line with these general observations, this chapter specifies an identified multi-equation lagged distribution model as a more appropriate functional form to examine CEO cash reward and performance relationship. A two-step System GMM is identified as an appropriate dynamic panel estimator. It is thought that this research strategy enables generalisable research findings that can then be used to formulate more task-specific and nomothetic guiding principles, or targeted interventions, to enhance the practice of CEO reward and performance management.

5.3 Data and Sample

This study draws on consecutive reported annual financial and reward data collected on Australian public companies that, at any time between 1998-9 and 2005-6, were included in the S&P/ASX 500 index (i.e. the share index representing the 500 most highly capitalised public companies traded on the Australian Securities Exchange). Only firms with five or more annual observations were included in the final sample, giving a total potential sample of 4,456 company years of panel data. The final sample includes data relating to a total of 663 distinct firms⁴, and 1,257 CEOs over this period. All data were captured at balance date.

In general, reward data were captured for the executive with the highest reported cash reward (i.e. base salary, cash benefits, plus cash incentives/bonus). In the vast majority of cases this is the individual nominated as the 'Chief Executive Officer' (CEO) or 'Managing Director' (MD). However, in a small number of cases where we have observed that the nominated CEO or MD was not the executive or director with the largest individual shareholding, data were captured for the director with the largest individual shareholdings rather than for the nominated CEO/MD. In many such cases this individual was an executive nominated as the 'executive chairperson', who, by virtue of their shareholdings, occupied a position of executive leadership and influence on the board greater than that of the nominated MD/CEO.

⁴ Using the statistical software STATA, the researcher was able to identify that 95% of firms sampled had balanced panels of data.

Discussions in the previous chapter indicated that since 1998 Australian Corporations law has imposed disclosure requirements for both the directors and executives within listed corporations. The *Company Law Review Act 1998* required firms to compile a Director's Report detailing 'the nature and amount of each element of the emolument of each director and each of the 5 named officers of the company receiving the highest emolument'. It also mandated total CEO reward to be reported in disaggregated form (base salary, superannuation, benefits, cash bonuses, termination payments, etc.) and a discussion of the relationship between the remuneration policy for directors' and executives' and firm performance. Since then, various amendments have served to add detail to these requirements. Reward data for years prior to 1998-9 have not been included since before that time Australian companies were only required to report the total cash reward of \$100,000 and above in \$10,000 bands without disaggregating and without individual executives being named. Moreover, prior to 1998 companies were only required to disclose the equity holdings of board directors, not those of salaried executives.

Data were also captured on the number of shares held directly and indirectly by each CEO at each report date, as well as on the aggregate number of unexercised share options and share rights held at the relevant balance date. The decision to exclude the 'fair' value of CEO stock options will be explicated shortly.

Initial data management was performed using SPSS 14.0 (2006), and subsequent data analysis was performed using STATA 9 (2008). STATA was used to identify and remove annual duplicates within panels of data.

Data were collected retrospectively from March 2005 up until October 2007. During the data collection period, some companies in the sample changed their names, codes, or re-used codes. To prevent duplication and to account for firms having multiple ASX codes, data were checked throughout the data collection period. Companies de-listed during the period were excluded unless they had five or more annual observations. Listed trusts were also excluded.

All dollar values were inflation adjusted using the Australian Consumer Price Inflation index (CPI) with 1999 as the base year. Inflation rates were obtained from the Reserve Bank of Australia. Foreign currency payments were also adjusted to Australian dollar (\$AU) values at respective balance dates.

Past studies in the Australian context have excluded years in which there has been a CEO turnover event, or the final year of a given CEO's incumbency (Merhebi *et al.*, 2006; Stapledon, 2006), the rationale being that termination payments can add systematic noise to inferential analyses. In the current study, turnover episodes were dummy coded and controlled for in all regressions. Outgoing CEOs identified were coded 1 and 0 if otherwise. Incoming CEOs identified were coded 1, and 0 if otherwise. Results remained qualitatively unchanged when turnover episodes were excluded.

5.4 Variables

The previous chapter identified a range of causal relationships among variables specified in the hypothesised economic and structural model of CEO cash reward determination. A series of metrics have been applied to gauge the variables incorporated in the hypothesised model. The measures applied are detailed below.

5.4.1 CEO Reward

Some studies of CEO reward-performance sensitivity have used total reward measures (for example Buck *et al.*, 2003; Jensen and Murphy, 1990; Lilling, 2006; Lippert and Porter, 1997; Mishra *et al.*, 2000). Jensen and Murphy's seminal paper (1990) measured total CEO reward by aggregating salary, bonus, the value of restricted stock, deferred compensation, the equivalent value associated with the probability of dismissal, and the annual change in the value of CEO shareholdings. Even so, the extant empirical research has focused predominantly on executive *cash* reward. More specifically, models have specified annual CEO cash reward as the sum of salary and bonus payable within the fiscal year (see Abowd, 1990; Boyd, 1994; Cough and Schmidt, 1985; Decktop, 1988; Izan *et al.*, 1996; Leone, Wu, Zimmerman, 2005; Merhebi *et al.*, 2006; Ueng *et al.*, 2000). This preference for a total cash-based reward measure has been partly driven by the dearth of reporting on equity-based emoluments in the Australian context. In addition, researchers (e.g. Shields, 2005) have considered the use of these data problematic given the inconsistency in the valuation of the underlying stock. We will return to this point shortly.

In this study, three CEO cash reward variables are used. The first is a composite *CEO-total cash reward variable*, encompassing both incentive and non-incentive cash components (other studies utilising a comparable reward measure include Abowd, 1990; Boyd, 1994; Coughlan and Schmidt, 1985; Decktop, 1988; Levinthal, 1988; Merhebi *et al.*, 2006). This

measure includes salary, the dollar value of non-cash benefits, allowances, post-employment fees (including consulting fees), superannuation, and short-term cash incentives. The second *CEO annual incentive cash reward* measure is the level of annual reported performance-based cash reward. The third CEO cash reward measure is the level of *CEO total non-incentive cash reward*; this encompasses all the cash reward components outlined above excluding the performance-based (or incentive) cash component.

The annual value of equity-based CEO rewards and company stock holdings were not aggregated with CEO cash rewards measures for several important reasons. Since 2004, Australian companies have also been required to report the number and 'fair value' of new options and rights grants to each of the five named executives. However, since the mandatory disclosure of new option grants to Australian executives is of such recent origin (especially compared to the USA), and since the reported option valuation data are of questionable consistency, validity and reliability (Stapledon, 2006), the 'fair' value of these rewards have been excluded from our analyses (see a study conducted by ACSI in 2006 or evidence on the unreliability of reported new option grant fair values in Australian companies; and Shields, 2005). Rather, the analysis focuses on the elements of cash reward, including cash incentive payments. For our purposes however, it is important to note that the exclusion of equity based rewards is not a specification error of exclusion *per se*, as this does not affect the variance-covariance matrix, and thus does not bias estimates through omitted variable bias (see Berry, 1993). The exclusion of the value of equity-based rewards does, however, limit the extent to which causal inferences can be drawn in regards to total CEO reward.

While some studies have included the annual change in the value of CEO shareholdings in their CEO total reward measures (Jensen and Murphy 1990; Merhebi, 2006), it is believed that it is difficult to establish whether such a change is attributable to the CEO's incentive plan, stock purchase plan, or to option re-loads. While our main concern with the Merhebi *et al.* (2006), paper is the approach to parameter estimation, the inclusion of a change in the value of CEO shareholdings also warrants further interrogation. Consistent with Jensen and Murphy (1990), Merhebi *et al.*, (2006) also aggregate cash reward measures with annual dollar value changes in CEO shareholdings (see Jensen and Murphy, 1990). It is the subsequent interpretation of the change in the value of CEO shareholdings that concerns us, especially when the change in the volume of CEO shareholdings maybe attributable to share purchase (e.g. via option exercise) or disposal. In addition, despite their claim to be applying a

total reward measure, their total reward estimates take account of neither new option grant fair values nor mark-to-market (i.e. retrospective realised values) of new option grants made in a given year.

Data on the volume of CEO equity holdings were collected to examine the main and moderator effects of lagged equity-based CEO rewards and holdings on the relationship between CEO cash reward and performance. In terms of long term incentive plan (LTIP) or equity-based compensation, data were collected for the following: shares held directly and indirectly; the number of unexercised options or performance rights held or balance⁵; the number of performance rights or options granted during the fiscal year number; and the percentage of company shares outstanding owned by the CEO. Rather than operationalising *CEO share ownership*, and *CEO stock option and/or share rights plan participation*, the existing study, consistent with Lambert and Larcker (1987), operationalised these variables as indices of CEO-agent risk bearing (see Buck *et al.*, 2003 for another example). Consistent with Agency Theory, CEO ownership and stock option participation are posited to exert a lagged influence on CEO cash rewards, and also moderate the relationship between CEO cash rewards and performance. As suggested above specifying total reward measures in research may obscure nuances and tradeoffs, and differential sensitivity in CEO reward processes (see also Dechow, 2006). For example, in an attempt to manage CEO agent risk bearing, boards may use equity based CEO rewards as a substitute for cash-based reward conditional on market-return performance. In this situation, it is reasonable to expect CEO equity participation to negatively moderate the relationship between CEO cash reward and measures of market-return performance (Lambert and Larcker, 1987).

There are notable problems with construing equity-based rewards as the optimal CEO performance incentive mechanisms that displace the notion of CEO cash reward for performance. Ellig (2003) suggests that cash-rewards can prefer over equity-based rewards where boards have concerns regarding equity dilution. It is thus reasonable to expect CEO cash reward, which remains a significant proportion of total CEO reward, to co-vary with market and non-market firm-level performance criteria. Indeed, shareholders will continue to be surveyors of cash performance-insensitive CEO cash reward. From an Agency Theory

⁵ This excludes 'zepos' (zero exercise price options) and listed options. To enhance the precision of these data, a distinction was made as to whether the incumbent held options, performance rights or both.

perspective CEO cash reward for performance is a necessary requirement in managing 'moral hazard', irrespective of agent ownership and stock options (Aggarwal and Samwick, 1999a). Part of managing moral hazard is the enforcement of 'ex post settling up', which requires the board to enforce upward or downward adjustments to cash awards on the basis of firm performance (Fama, 1980). While it is important to recognise the escalation in equity-based executive incentives, it is important that theory, research, and practice, does not detract from the instrumental role that cash-based incentives play in providing short term performance incentives.

5.4.2 Performance

Agency Theory has been pivotal in influencing the research methods in the area of executive reward as well as influencing the firm-level performance measures used. It is observed in Chapter Three that research investigating the reward-performance link in publicly listed companies, has shown a predilection for market-based or stock return performance metrics. Market-returns have been measured in various ways. These include: Total Shareholder Return (TSR) (Abowd, 1990); the annual adjusted return to shareholders adjusted for dividends and capitalisation changes (Izan *et al.*, 1996; Merhebi *et al.*, 2006); discounted present value of all future cash flows accruing to shareholders (Jensen and Murphy, 1990); Compounded monthly stock returns (Leone *et al.*, 2005); and abnormal stock price returns (Coughlan and Schmidt, 1985).⁶

To a lesser extent, research has also operationalised performance through accounting return measures. Accounting measures have included *return on assets* (ROA) and *return on equity* (ROE) (see Conyon *et al.*, 2001; Izan *et al.*, 2000; Ke *et al.*, 1999; Leone *et al.*, 2005; Lilling, 2006; Jensen and Murphy, 1990; Mishra *et al.*, 2000 for examples), and operating profit after tax (OPAT) (Izan *et al.*, 1996).

Accounting performance metrics have been used less frequently on the grounds that they are more susceptible to managerial manipulation. However, as Lambert and Larcker (1987) suggest, the validity of market-based measures is equally contentious as an index of CEO performance. Factors extraneous to the CEO's locus of control may influence share price performance and, in turn, the determination of CEO rewards. For instance, CEOs may enjoy

⁶ These studies modelled these firm-level performance measures separately.

windfalls in the event of market bullishness. By extension, these measures can further act to attenuate the link between reward and performance because extraneous noise in share price performance can increase the CEO's risk-bearing so that a risk compensation premium is required to offset the agent's risk aversion (Gomez-Mejia and Wiseman, 1997). These considerations will be revisited in forthcoming chapters.

To account for the possibility of the board using market and non-market performance criteria to evaluate CEO performance against, this study uses ROE⁷ as a non-market accounting-return performance measure along with annual real stock returns as a market-return measure. *Real Returns* are estimated as follows: $[(1 + \text{nominal return}) / (1 + \text{inflation rate})] - 1$. A three-year cumulative real return measure is also used on the premise that it is a common measure used to evaluate CEO performance against (see Bender and Moir, 2006). It is also used to account for the lagged adjustment of CEO cash reward to a longer performance period. This three year stock real return measure is calculated as follows: $[(1+R_t)(1+R_{t-1})(1+R_{t-2}) - 1]$.

Further auxiliary regression analyses were conducted using alternative firm-level performance measures. These measures included return on invested capital (ROIC), return on assets (ROA), and abnormal stock returns.⁸ Revenue measures were not used on that basis that, in the Australian domain, banks and insurance companies have different methods for measuring and reporting revenue.

5.4.3 Size and Risk

The empirical literature reviewed in Chapter Three suggests that firm size and firm risk are important controls in examining the *ceteris paribus* relationship between CEO cash reward and performance. This is also consistent with the theoretical specification of CEO cash reward and performance elucidated in the foregoing chapter.

⁷ Sourced from FinAnalysis, ROE is calculated as net profit after tax/ (shareholders equity-outside equity interests). This measures company performance in terms of how well managers are managing funds provided by investors.

⁸ Return on Assets was also sourced from FinAnalysis and was calculated as earnings before interest/(total assets less outside equity interests). Data on ROIC were sourced directly from Fin Analysis which calculates this measure as Net operating profit less adjusted taxes/operating invested capital before goodwill.

It is well established that firm size continues to explain variance in CEO or executive reward above and beyond shareholder return measures (see Tosi *et al.*, 2000 for a meta-analysis). Again, firm size has been measured in various ways. Commonly used measures include annual sales, the log of sales, total assets, as well as market capitalisation (see Tosi *et al.*, 2000). In the current study *firm size* is measured as the natural logarithm of firm total assets (sourced from FinAnalysis e-database).

Some researchers (Aggarwal and Samwick, 1999a; Mishra *et al.*, 2000; Merhebi *et al.*, 2006) have investigated the moderating effects of the variance or 'riskiness' of firm real stock returns, on CEO reward and performance relationship, on the premise (consistent with Agency Theory) that executive-agent risk preferences moderate the performance incentive effects of executive reward. In support of this proposition these researchers also found that CEO reward for performance sensitivities fell as firm specific risk increased. On this basis it is appropriate for the current research to control for total firm risk. This study operationalises Aggarwal and Samwick's (1999a) measure of total firm risk. *Firm risk*, a total risk measure, is estimated as the cumulative distribution of the variance of firm monthly real returns, including dividends, over a minimum of three years (36 months) prior to the year *t* (Aggarwal and Samwick, 1999a)⁹. Chapter Seven will examine the main and moderator effects of firm size, and firm risk, on CEO reward and performance.

5.4.4 CEO Share Ownership

Agency Theory considers executive ownership as an effective agent-principal alignment mechanism. On this basis, and on the basis of research evidence on the relationship between CEO reward and CEO share ownership, CEO share ownership is operationalised as a regressor.

CEO share ownership is estimated from data collected from FinAnalysis. Consistent with the method used by Jensen and Murphy (1990) this study measures CEO stock ownership as the sum of CEO direct and indirect shareholdings over total ordinary shares outstanding.

⁹ The cumulative distribution function was then obtained by ranking the observations from 1 to sample size, subtracting 1, and dividing by the sample size minus 1.

CEO participation in stock option and/or share rights plans is operationalised as a variant of CEO ownership. For the purpose of analysis, a binary measure of CEO participation in stock option and/or share rights plan is used, with '1' indicating that the CEO participated in a stock option and/or share rights plan, and a '0' indicating no participation (see Buck *et al.* (2003), for an example of a study using this methodology). Chapter eight examines the main and moderator effects of lagged CEO share ownership, and CEO stock option participation, on the CEO cash reward and performance relationship.

5.4.5 External Ownership

Previous studies examined in Chapter Three have used a categorical (rather than a continuous) measure of external *ownership concentration* (for example, Core, *et al.*, 1999; Teylin, 1996). In these studies, ownership concentration is operationalised as a dummy variable for differentiating between owner-controlled and manager-controlled firms. Owner-controlled firms are defined as those having at least one major shareholder, other than the CEO, owning five percent or more of the company's equity; management-controlled firms are defined as those in which there is no single major external shareholder (Grabke-Rundell and Gomez-Mejia, 2002: 11).

In the current study, a one-year lag in ownership concentration is operationalised as a hypothesised moderator of CEO cash reward and performance. Two measures of external ownership concentration are computed. The first measures the percentage of stock owned by the firm's largest shareholder as a percentage of total stock outstanding. The second measures the percentage of stock held by the companies' largest 20 shareholders, as a percentage of total company stock outstanding. These data were obtained directly from annual reports retrieved through Connect4 and FinAnalysis e-databases. Chapter Nine examines the explanatory power of external ownership to explain variation in CEO cash rewards on the one hand, and CEO cash reward and firm-level performance on the other.

5.4.6 Board Governance

Board governance best practices are operationalised as hypothesised determinants and moderators of CEO cash reward and performance. Chapter Four identified specific board governance practices considered to enhance boards' management of CEO reward and performance. In this study, five measures of board governance best practice are used. These include: (i) a *board chair independence* variable measures for whether the chairperson was a

non-executive director; (ii) *non-executive director dominated remuneration committee* measures whether there was a formal independent remuneration committee¹⁰; (iii) non-executive dominated nomination committee variable measures whether there was a formal independent nomination committee; (iv) the *non-executive directors* variable measures the percentage of non-executive directors on the board; and (v) finally the *non-executive director shareholders* variable measures the percentage of non-executive directors on the board with company shares.

5.5 Model Specification

It is important that the model specified to examine the relationship CEO reward and performance reflects the functional form of the relationships among variables in a specified theoretical system (Berry, 1993:30). The specification of the econometric model in this thesis accords with the postulates underlying the research design and theoretical model examined in Chapter Four by specifically encapsulating the process by which CEO cash rewards are determined.

A dynamic panel model of CEO reward and performance operationalised in this thesis is predicated on the assumption that CEO cash rewards are dynamically related to performance, and past realisations of performance, and CEO cash rewards are outcomes of a complex dynamic decision making process. The board evaluates performance and other posited contextual factors prior to the fiscal year in which rewards were reported (Ellig, 2003). Thus, specifying a dynamic panel model is a natural restriction given that we expect performance to exert a lagged influence of CEO cash reward (see Ellig, 2003; Lambert and Larcker, 1987). A dynamic lagged model of CEO reward and performance assumes that CEO reward is related to past values of the hypothesised explanatory variables, as well as to its own past values (Ostrom, 1990:58).

It is important that there is not only synergy between the theoretical and econometric specification of CEO reward and performance, but also that the parameter estimation approach accords with the theoretical and empirical specification of CEO reward and performance. Extant empirical research on CEO reward and performance has not espoused

¹⁰ Firms coded as having a 'formal independent committee' were those that identified the committee explicitly in the board member and committees tables. Firms were in addition coded 1 where 50% or above were identified as non-executive directors.

this logic, and consequently suffers from several sources of contamination. In specifying a static model¹¹ (for further explication, see Sayrs, 1989), the extant research has neglected the complex error structure attendant to a dynamic panel data. For our purposes, it is important to recognise that a more appropriate estimation technique for estimating the relationship between CEO reward and performance, as well as the determinants of this relationship, is an identified multi-equation model. This approach addresses the complexities attendant to dynamic panel models, such as higher-order auto-correlative processes, serial correlation, and endogeneity (see Ostrom, 1990).

An additional challenge - and oversight in extant empirical research - is the empirical estimation of CEO reward and performance that CEO cash rewards may be adjusted to *deeper* lags in performance. The entrenched Jensen and Murphy (1990) statistic carries several limitations. One of them is that it does not account for the possibility that variation in CEO reward can also be explained by CEO reward levels in the year prior (Y_{t-1}), and results in dynamic misspecification. For example, reward decisions may also be based on *anticipated* performance outcomes, especially if the board deems it appropriate to reward the CEO for current or previous investment decisions. This demonstrates the limitations of specifying a static lagged model. This is represented in the following equation

$$Y_t = a + b_0X_t + b_1X_{t-1} + b_2Y_{t-1} + e_t \quad (1)$$

The equation implies that the dependent variable Y may be sensitive to a one year lag in X and Y . When this logic is applied to CEO reward (Y), it suggests that CEO reward levels can be explained in terms of contemporaneous and a one-year lag in levels of firm level performance (X, X_{t-1}). This means that deeper lags are absorbed into the disturbance term, and then correlate with variables in the x-vector (see Sayrs, 1989); resulting in higher order autocorrelation (see Baum *et al.*, 2007). To account for these lagged and forward adjustment considerations, it is considered appropriate to identify a dynamic panel model estimator that can account for the effects of deeper lags in the explanatory variables on the dependent variables (see Ostrom, 1990, for further discussion of times-series models). These

¹¹ The efficiency of estimators based on assumptions pertaining to static econometric models is contingent on observations being serially uncorrelated and the disturbances homoscedastic. However, such assumptions are unrealistic in the context of pooled time-series analysis (Sayrs, 1989:25).

shortcomings warrant the specification of a lagged distribution model to account for higher-order autocorrelation. We revisit these points shortly.

In contradistinction to extant empirical research, in specifying a lagged distribution dynamic panel model to examine the relationship between CEO cash reward and performance this study assumes, *a priori*, that variable in the x vector (that is hypothesised explanatory variables and covariates) may not be strictly exogenous. Specifying a static dynamic panel model, by default, violates assumptions of orthogonality, thus OLS estimators yield inconsistent estimates for dynamic panel models (see Ostrom, 1994; Sayrs, 1989). Thus, instruments may be required to orthogonalise the suspected endogenous variable through a reduced form equation (See Sayrs, 1989). Furthermore, past research has failed to identify appropriate dynamic panel estimators that account for the challenges highlighted in this discussion pertaining to dynamic panel model specification.

This thesis set out to explain variation in CEO cash rewards, and their *ex post* relationship to firm-level performance. Towards this end, two primary cash reward variables are used: i) the level of total CEO cash reward; ii) the level of CEO reported performance-based cash reward. These variables are interacted with all the posited contextual factors deemed to impact on board deliberations pertaining to CEO reward and performance in forthcoming chapters.

Modelling a composite measure of CEO cash reward alongside separate incentive and non-incentive cash components of reward enables more nuanced interpretations of estimated coefficients, and accord with the notion that the criteria the board use to judge the efficacy of a specific proposal may depend on the component of CEO total reward which is the object of the proposal. For example, some of the economic and structural variables in the model identified as *foci* in board deliberations of CEO cash rewards may affect CEO performance-based rewards, but not total cash based rewards. Operationalising composite and component-specific measures of CEO cash reward, enables a richer analysis of the decisional processes governing CEO cash reward.

A necessary caveat, however - as discussed in Chapter Four - is that the dependent variables are not total CEO reward measures. They do not include the present value of equity-based rewards, and thus inferences pertaining to CEO total reward are tempered on this basis.

Based on the extant literature, three primary firm-level performance measures are specified as focal independent variables. For these, two are measures of market-returns (real annual stock returns and three year cumulative stock returns), and a third measures accounting returns (return on equity). These measures were deemed appropriate given that they are commonly used as performance measures in CEO performance evaluations (See Bender and Moir, 2006).

Lambert and Larcker (1987) suggest that the relative weight placed by boards on these two types of performance measures is context-specific. The use of an accounting-return measure is consistent with the supposition that boards rely differentially on the two types of measures (Indjejikian, 1999; Kren and Kerr, 1992; Lambert and Larcker, 1987). Consistent with this, Ellig (2003) suggests that growth firms may place more emphasis on market return measures (Ellig, 2003). Raghavan *et al.*, (2005) also provide empirical support for this argument in reporting that equity firms rely more on accounting return measures of performance in executive reward determination compared to high-leveraged firms.

An important caveat against extant research and theory, raised in the previous chapter, is that boards do not necessarily select measures of CEO performance on an informed-dispassionate basis. It is also argued that rather than use single and divergent measures of CEO performance, boards may rely on multiple measures of performance in multiple time periods. Finkelstein and Hambrick (1988) suggest that a way forward for research would be to consider that CEO reward adjusts to multi-periodicity in performance. They further suggest that the CEO's current reward may reflect cumulative performance (Finkelstein and Hambrick, 1988: 547). Very few studies have since taken this into consideration in the empirical specification of CEO reward and performance, and thus do not consider the possibility that boards may adjust CEO reward to deeper lags in company performance. This study attempts to account for this possibility.

Finally, in the current study firm-dummies are specified to co-vary out unobserved fixed effects. Industry is controlled for in initial OLS regressions excluding fixed effects. The Global Industry Classification Standard (GICS) sector classifications (n=10) were sourced from FinAnalysis to create industry sector dummies for each observation.

It is also important to control for the inflationary or deflationary effects of turnover episodes on the dependent variables. It is well known that turnover episodes add considerable noise to

CEO reward data. Termination payments can have significant inflationary effects on reported CEO reward, especially the cash component. Past research has controlled for turnover by excluding observations relating to outgoing CEOs. Rather than excluding these observations, we have modelled two dummy variables, one for incoming CEOs (N= 695), and one for outgoing CEOs (N=628).

The econometric model applied in the study specifies mixed level data. In an attempt to control for possible nested effects of CEO-level factors on firm-level data (see Wooldridge, 2002), CEOs dummies were operationalised alongside firm-dummies. However, the majority of these dummies were dropped by STATA during computation on the basis of multicollinearity. The results remained substantively unchanged when the remaining CEO dummies were included. In addition, a number of alternative CEO-level measures were used to address CEO nested effects. Dummies were also used to capture for whether the CEO was internally appointed, a member of the remuneration and nomination committees, or was a CEO-founder. With the exception of the turnover dummies, these theoretically-informed CEO-level variables were dropped from the current analyses because they lacked explanatory power in preliminary sensitivity analyses on the basis of joint significance tests.

5.6 Parameter Estimation

Agency Theory research has predominately estimated the relationship between CEO cash reward and performance through a first-differenced fixed effects approach. This is seen as being necessary to co-vary out unobserved fixed effects. Jensen and Murphy (1990) specified a fixed effects first-differenced model to examine the sensitivity of CEO total reward to shareholder returns. As noted in Chapter Three, many several subsequent studies have followed this first-differenced approach to estimation (for example: Aggarwal and Samwick, 1999b; Conyon and Peck, 1998; Conyon and Sadler, 2001; Hartzell and Stark, 2003; Ke *et al.*, 1999; Leone *et al.*, 2005; Merhebi *et al.*, 2006). A fixed effects estimator is deemed efficient when the explanatory variables are strictly exogenous and errors are homoscedastic (Wooldridge, 2002: 439).

However, as Roodman notes (2007), a first-differenced model is still susceptible to violating the classical linear model assumptions regarding orthogonality.¹² First-differences are still

¹² The efficiency of OLS estimators depends on Classical Linear Model assumptions that are based on static models. First, disturbances are identically distributed, and the variance of disturbances is constant. Second,

susceptible to endogeneity stemming from serial correlation, higher order autoregressive disturbances¹³ (Says, 1989), and multicollinearity (Wooldridge, 2000), and simultaneity, (Baum *et al.*, 2007; Roodman, 2007). In consequence, with a first-differenced model, inferences regarding the effect of performance on CEO reward may be overestimated or biased. The entrenched approach to the empirical specification and parameter estimation of CEO reward and performance ignores the effects of deeper lags in the explanatory variables, and also the possibility that explanatory variables are predetermined (See Baum *et al.*, 2007). Consequently, it is appropriate to suggest that much of the extant research has failed to adopt a more considered approach to identifying appropriate parameter estimators for dynamic panel data.

Instrumenting purportedly endogenous explanatory variables has been one approach to expunge such variables of omitted variable bias; this is the Instrumental Variable (IV) Regression or Two Step Least Squares (2SLS) approach (Says, 1989; Wooldridge, 2002). In terms of the application of this approach to the current study, the use of instrumental variables acts to expunge performance measures of unobserved effects on performance which contribute to 'noise' or measurement error in CEO performance evaluation (Says, 1989; Wooldridge, 2002). Unobserved CEO effects, such as individual managerial ability, for example, can render performance measures endogenous to the error term and need to be controlled for to ameliorate bias in the estimated coefficients for performance.

A variable that is both a determinant of the suspected endogenous explanatory variable, and an indirect determinant of the dependent variable (yet unrelated to the error term) can be used as an 'instrument' to orthogonalise the suspected endogenous variable (Wooldridge, 2000). Thus this estimator includes a vector for other covariates that act as instruments to

disturbances are not serially independent of future and past values (Wooldridge, 2002). Third, regressands are uncorrelated with the errors (orthogonal, strict exogeneity assumption) (Roodman, 2006; Wooldridge, 2001).

¹³ The use of a lagged dependent variable as a regressand results in upward bias in OLS (Ostrom, 1990). Given that it is predetermined or endogenous, it becomes correlated with the error term and thus violates the strict exogeneity assumption. This also violates the orthogonality assumption (Says, 1989). The preponderant use of first differences is also rendered problematic given the likelihood that errors are serially correlated (Wooldridge, 2001:311) that again violates Classical Linear Model assumptions.

orthogonalise the suspected endogenous variables through a reduced form regression (see Sayers (1989), for an explication).

The current study uses industry-level instruments to orthogonalise the suspected firm-level explanatory variables. This decision was informed by research. Aggarwal and Samwick (1999b) found that firm-level performance was related to rival firm performance. Kren and Kerr (1992) make an insightful contribution to the field by illuminating the role of relative performance evaluation in the board's appraisal of CEO performance. It was noted in the discussion of the research design and theoretical model in the previous chapter that boards can examine firm risk as a way to discern or deduce the effects of the CEO's actions on firm-level performance. It is also intuitive that boards can examine industry level performance in order to make more accurate attributions regarding CEO performance. Further, industry level performance is likely to affect performance directly, and unlikely to affect CEO cash rewards directly. *A priori*, we can expect a positive association between firm-level performance and industry level performance. Therefore, industry-means of the three performance measures, used in this study, are expected to have indirect effects on CEO cash rewards. These instruments were tested for exogeneity and overidentification.

Using estimators appropriate for dynamic panel models has considerable merit in terms of addressing all concomitant potential sources of contamination noted above. One such estimator is the system Generalised Method of Moments (GMM) introduced by Arellano and Bond (1991, cited in Roodman, 2007) and further developed by Blundell and Bond (1998). Roodman (2007) identified several advantages of using a system GMM approach as an alternative approach to parameter estimation. Through a system of equations, the system GMM renders explanatory variables exogenous by addressing simultaneity and possible reverse causality between the dependent variables and explanatory variables, serial correlation and higher-order autoregression in the error term, omitted variable bias stemming from measurement error in the explanatory variables, and multicollinearity in the x-vector (Roodman, 2007; Wooldridge, 2000;).¹⁴

¹⁴ While the IV estimator is useful in terms of ameliorating endogenous explanatory variables, it is still based on assumptions pertaining to a static linear model (Roodman, 2007; Wooldridge, 2002), and in the specification of a dynamic panel model, estimates may still be susceptible to contamination from autoregressive processes

The system GMM approach yields more efficient estimates to examine the effect of exogenous changes in performance on CEO cash rewards. (see Wooldridge; 2000), and represents a novel approach to the estimation of CEO reward for performance. In this system, purportedly endogenous and predetermined regressors. (in this case, all explanatory variables excluding year dummies, turnover episodes, and firm risk) are differenced and instrumented using the differences and levels of exogenous regressors. Cognisant of dynamic misspecification, the system GMM perpetuates a lagged distributed model (Gujarati, 2003; Roodman, 2007). This accounts for the lagged depth in explanatory variable mentioned earlier as a key oversight of extant approaches to the estimation of CEO reward and performance examined above. Specification tests reported in forthcoming chapters confirm that using a system GMM to estimation is more efficient than using a fixed effects, and instrumental variable approaches.

The following single equation encapsulates an identified multi-equation dynamic panel model of CEO cash reward and performance relationship estimated through a system GMM approach:

$$C_{i,t} = \lambda_1 EX_{i,t} + \gamma_{i,t} + \lambda_2 EW_{i,t} + (V_i + \eta_{i,t}), \quad i=1, \dots, N; t=1, \dots, T, \quad (2)$$

C equals the dependent variable, which in this case is the natural logarithm in a selected measure of CEO cash reward. EX is a vector for strictly exogenous variables. In the current study, these are year dummies, and turnover episodes. These variables are considered exogenous because there is little reason to suspect that they are predetermined or endogenous (Blundell and Bond, 1998; Roodman, 2007). EW is the vector for predetermined or endogenous covariates. The EW vector includes explanatory variables including risk or the variance of firm market returns, board governance measures, firm size, and firm performance. V is the firm-level fixed effects; γ the external instrument vector for the performance variables¹⁵, and η is the error term that is assumed not to be auto-correlated, with the added assumption that v and η are not serially correlated.

¹⁵ The rank and order conditions of these instruments for the performance vector are tested in Chapter Six. The instruments satisfied both rank and order conditions, suggesting that their inclusion did not result in the over identification of the model. The instruments for performance measures were the industry means of the relevant performance measure.

Blundell and Bond (1998) proposed modifications to Arellano and Blundell's (1995) formulation of a linear first-differenced GMM. They included further moment conditions to result in a system GMM (Roodman, 2007). These moment conditions or equations enable the function to be extended to models with endogenous and predetermined regressors (see Blundell and Bond, 1998: 117). Blundell and Bond argue that the linear GMM advanced by Arellano and Blundell (1995) only uses lagged levels to instrument first differences, when it should also include a moment condition where lagged differences are used to instrument levels (1998: 116) to ameliorate autoregressive processes. As an additional moment condition, they are suggesting the use of the residuals from the first step of the equation to orthogonalise the x-vector like an IV estimator.

In addition, the two-step system GMM command in STATA allowed the researcher to specify the depth of lags. The researcher used 3 lags and also deeper lags, which accords with suggestions made by Roodman regarding lag depth (2007). The omission of lagged depth in the specification and estimation of CEO reward and performance potentially contaminates estimates in the extant research, whereas the current study avoids this problem of dynamic misspecification. Also, another benefit of the system GMM approach in STATA is that through the 'robust' command, the researcher was able to ensure that the standard errors were robust to heteroscedasticity and arbitrary patterns of autocorrelations within firms (Roodman, 2007: 37).

Using the system GMM approach is also beneficial in terms of addressing simultaneity between values of x, y, and disturbance vectors through a system of equations. As Jaccard and Turrisi (2003:1) suggest, causal models can contain up to six different types of causal relationships. The estimation method is critical in terms of optimizing the validity of inferences deduced from the estimated coefficients. As indicated in the previous chapter, this study makes the *a priori* assumption that CEO reward and performance decisions are an artefact of complex relationships and interactions between firm, CEO, and board level contingency factors. Further, a system GMM approach to estimation is relatively more appropriate given its ability to control or partial out different types of causal relationships among controls, and explanatory variables, and the disturbance vector. For example, it is intuitive for remuneration committees and firm size to be bi-directionally related; bigger firms may demonstrate a greater preponderance of best practice initiatives such as a remuneration committee precisely because they have bigger boards.

A further benefit of this approach to estimation is that it preserves sample size. Usually, specifying a dynamic lagged panel model means that observations are lost in specifying lagged values. To ameliorate this loss of data, the system GMM uses forward orthogonal deviations as opposed to first differences as instruments (see Baum *et al.*, 2007; Roodman, 2007).

In this study the three approaches to parameter estimation described above are used to estimate the *ceteris paribus* relationship between CEO cash rewards and performance. These include: i) the fixed effects estimator; ii) the IV regression estimator; and iii) the two-step system GMM.¹⁶ It is expected that typical sources of contamination discussed above will render estimates of all three regression approaches inconsistent. This methodology enables the researcher to ascertain, through specification tests examined in Chapter Six, the effects of three sources of measurement error relevant to dynamic panel models on the estimated coefficients. The three estimators differ in the efficiency with which they address these potential sources of contamination, each having differential effects on the structure of the error component (Saysr, 1989).

5.7 Multivariate Regression Analysis

In Chapter Four, CEO cash reward levels are conceptualised as outcomes or artefacts of a complex board decision-making process. In essence the model re-casts firm size, total firm risk, CEO share ownership, external ownership, and corporate governance prescriptions, as bases or *foci* of board deliberations at each phase of the decision-making process. On the other hand, board governance structures are cast as a moderator of the board's management and control of CEO cash reward and performance. Operationalising these factors as determinants of CEO cash reward levels, and then examining the moderating effects of these factors on the relationship between CEO reward and specified firm level performance measures (in Chapters Six, Seven, Eight, Nine, and Ten), enabled the researcher to infer

¹⁶ The two-step system GMM addresses problems attendant to dynamic panel models including: predetermined and endogenous explanatory variables, serial correlation, heteroscedasticity, and yields more efficient estimates by removing unobserved fixed effects, and measurement error (Wooldridge, 2002). It uses Windmeijer finite sample correction of standard errors, in the absence of which one-step estimation is more efficient (see Roodman, 2006 for further discussion). The system GMM minimizes data loss typical of first differences by using forward orthogonal deviations (Roodman, 2006: 19).

whether these factors are important *foci* of board deliberations at each stage of the decision-making process.

Joint significance tests were performed to ascertain whether groups of variables had a greater impact on the dependent variable when pooled. This involved putting all explanatory variables and their interaction terms in the one model. By selecting individual variables or groups of variables and then conducting joint significance tests, the researcher was able to examine whether specific explanatory variables or groups of explanatory variables significantly and additively increased the explanatory power of the model through a significant F-statistic.

From a more conceptual perspective this is important especially if the explanatory variables, such as board governance variables for example, additively impact on CEO reward outcomes and board decisions. For example, it is conceivable that boards practicing ‘independence’ at the board and committee levels, and also at board chairperson level, may have a stronger ability to monitor and manage CEO reward and performance than a board only practicing independence at the committee level.

A David Mackinnon test through the ‘*dmexogt*’ command in STATA enabled the researcher to examine endogeneity in the fixed effects OLS model after an IV regression (Wooldridge, 2000). A significant F-test statistic suggests that endogeneity may bias the estimates of a fixed effects approach. In most cases these statistics were significant, indicating that there was at least one endogenous covariate in the x-vector. This also supports an IV and system GMM approach to estimation over and above a fixed effects approach to parameter estimation.

To ensure that the system GMM was correctly identified, the Hansen J statistic was conducted and analysed. The Hansen J test of over-identifying restrictions checks whether the instruments in the system of equations are exogenous. A significant F test statistic indicates that the instruments specified are inappropriate (Roodman, 2007). Another more informal test of whether the model has appropriate instruments is to check whether the number of instruments used exceeds sample size (see Roodman, 2007: 43). All equations met these requirements and were not over-identified.

5.8 Conclusion

This chapter has elucidated the key weaknesses of the empirical specification and estimation of CEO reward for performance in previous studies; weaknesses that are said to limit the extent of legitimate inference pertaining to CEO reward and performance management. On the basis of this analysis, it is plausible that results from studies espousing a first-differences approach to parameter estimation, thus existing Australian research, are method driven. While such an approach is used to co-vary out unobserved fixed effects, it may not address problems such as high-order autocorrelation in first differences, and multicollinearity. Problems such as heteroscedasticity, multicollinearity, simultaneity, and higher order autocorrelation are best addressed through a multi-equation approach (see Blundell and Bond, 1998).

The system GMM approach to estimating parameters has been chosen for this study because it accords more intuitively with the dynamism attendant to CEO reward determination, as well as the error structure of a dynamic panel model (see Sayrs, 1989). Caveats to research method espoused in the current study are examined in the final chapter. It is believed that this approach to research is beneficial in terms of serving as a foundation for further case-specific and idiographic research that is more amenable to the distillation of context-specific best practice in terms of CEO reward and performance management. In other words, qualitative research would usefully supplement and extend the findings presented in this thesis. The following chapter examines the relationship between CEO reward and performance before examining the factors in the model that are posited to moderate this relationship.

Chapter Six

CEO Cash Reward and Performance in Australia: A System GMM

Dynamic Panel Analysis

6.1 Introduction

The previous chapter raised a number of caveats against extant empirical research using a first-differenced approach to estimate the sensitivity of CEO reward to measures of company performance. Research examining this association in an Australian context has also espoused this approach and overlooked the application of system GMM panel analysis. In effect, the Australian estimates are in part method driven, and thus causal inferences should be tempered with considerable caution.

A recent study, Merhebi and others (2006) reported that CEO salary plus bonus was significantly sensitive to both measures including ROE, ROA, and real annual stock returns. On the basis of their first-differenced fixed estimates they concluded that Australian boards are diligently promulgating CEO reward-for-performance. However, such conclusions are rendered questionable when the limitations of using a first-differenced approach to parameter estimation on dynamic panel data are considered. To be able to infer that Australian boards are managing the relationship between CEO cash reward and performance requires a more sophisticated approach to parameter estimation.

This chapter examines the association between CEO total cash reward and measures of company performance in Australia over the period 1999 to 2006, using system GMM panel analysis. Using more rigorous methods of parameter estimation, which account for the complex error structure of dynamic panel data models, this study finds no relationship between CEO total cash reward and measures of firm-level performance commonly used by the board to determine performance-contingent rewards. This study also finds that levels of CEO cash reward that are disclosed as being performance-contingent are unrelated to a range of firm-level performance measures. While this study does not incorporate the value of equity-based reward, it does test whether CEO cash rewards provide *ex ante* performance incentives to the CEO, and results suggest they do not. In using three different approaches to parameter estimation, it is shown that first-differenced estimates may not be as efficient as previous authors in the field have presumed. Finally, this chapter considers the results in light

of the propositions advanced in Chapter Four. It is suggested in Chapter Four that a range of contingent factors operating at various levels – at the level of the CEO, the firm, the industry, and the regulatory system - may moderate the board's administration of CEO cash reward. The findings presented in the present chapter suggest that greater considerations should be given to the decision-making processes underpinning CEO cash reward outcomes, and whether Australian boards do undertake efficacious analyses to judge proposed CEO reward actions.

6.2 Hypotheses

It is the responsibility of the board to ensure that CEO total cash rewards are not only competitive and attractive, and cost-effective, but also aligned to shareholder interests. These objectives are also assumed to become the criterion for judging the efficacy of proposals put forward for full board approval. Ellig (2003) suggests that it is not uncommon for CEO performance to become a secondary consideration in the management of CEO cash rewards. This study also argues that the proliferation in equity-based CEO rewards should not detract from the notion that CEO cash rewards supplementary CEO performance incentive mechanism used in conjunction with CEO equity-based rewards. On the basis of these considerations, Chapter Four presented the following propositions:

Proposition 1: While CEO reported CEO cash rewards may be sensitive to firm performance it is unlikely to be exclusively contingent on firm performance.

Proposition 2a: a CEO total cash reward is positively associated with lagged and/or contemporaneous accounting and/or market return performance.

Proposition 2b: a CEO annual cash reward is positively associated with lagged and/or contemporaneous accounting and/or market return performance.

Accordingly, in this chapter the following hypotheses are tested to validate the foregoing assumptions regarding the board's management of CEO reward and performance.

H6.1: There is a significant positive association between CEO total cash rewards and lagged annual real stock returns.

H6.2: There is a significant positive association between CEO total cash rewards and lagged 3 year cumulative stock returns.

H6.3: There is a significant positive association between CEO total cash rewards and lagged return on equity.

H6.4: There is a significant positive association between CEO annual incentive cash rewards and lagged annual real stock returns.

H6.5: There is a significant positive association between CEO annual incentive cash rewards and lagged 3 year cumulative stock returns.

H6.6: There is a significant positive association between CEO annual incentive cash rewards and lagged return on equity.

The following section delineates the empirical model specified to test these hypotheses. That is to say, we now turn to explicate how the empirical specification of CEO cash reward for performance ameliorates the weaknesses in the extant empirical literatures that were identified in Chapters Three and Five. This approach taken seeks to ameliorate these sources of measurement error identified as contaminants of extant empirical research on CEO reward and performance by means of a stronger link between econometric specification, parameter estimation, and the theoretical specification of CEO reward and performance. It is believed that this will enhance the precision and depth of inferences regarding the board's decision and strategic control and management of CEO cash reward and performance.

6.3 An Alternative Empirical Model of CEO Reward-Performance Sensitivity

The empirical model specified to test these hypotheses operationalises two different CEO cash reward measures as dependent variables. Both accounting-return firm-level performance measures (Canyon and Sadler, 2001; Izan *et al.*, 2000; See Ke *et al.*, 1999; Leone *et al.*, 2005; Merhebi *et al.*, 2006) and market-return performance measures (Aggarwal and Samwick, 1999a; Canyon and Peck, 1998; Jensen and Murphy, 1990) were operationalised as independent variables.

The specification of market-based measures is intuitive from an Agency Theoretic perspective. The use of an accounting-return measure is consistent with the proposition that boards may rely differentially on the two types of measures depending on firm-specific factors (Lambert and Larcker, 1987; Kren and Kerr, 1992; Indjejikian, 1999). Besides specifying two types of firm-level performance measures, the empirical model also specifies a multi-period performance measure based on evidence that firms commonly assess three year shareholder returns when determining CEO reward (see Bender and Moir, 2006).

The dynamic panel model relating to CEO total cash reward level as the dependent variable is encapsulated in the following level equation:

$$CEOTotalCash_{i,t} = \alpha + \beta_0 CEOTotalCash_{i,t-1} + \beta_1 Size_{i,t-1} + \beta_2 FirmRisk_t + \beta_3 AccountingReturns_{i,t-1} + \beta_4 MarketReturn_{i,t-1} + \lambda_2 Turnover_{i,t} + \mu_i + \varepsilon_{i,t}$$

Where:

- *Size* is indexed by the natural logarithm of total assets, and *FirmRisk*, indexed by the cumulative distribution function of firm returns of 36 months prior (Aggarwal and Samwick, 1999a for methodology).
- *AccountingReturn* is measured by real ROE.
- *MarketReturn* is the vector for two market-return measures: one being the real stock returns, which measures returns relative to the risk free rate; the other being a 3 year cumulative real stock return measure to account for the possibility of annual incentives being based on longer and cumulative performance periods.
- *Turnover* is the vector for incoming and outgoing CEO dummy variables to control for payments which may include prorated payments, severance payments, as well as sign-on payments.

The model also controls for unobserved firm-effects through firm dummies, and time effects through year dummies. The same model is also estimated using annual cash incentives as the dependent variable.

Exhibit 6.1 also identifies the key variables modelled in the panel regression analyses. The specified model is estimated using three regression approaches: i) fixed effects estimator; ii) IV regression estimator; and iii) two-step system GMM. It is expected that typical sources of

contamination hitherto discussed will render estimates of all three regression approaches inconsistent.

Exhibit 6.1. Measures and Variables

Variables	Measures
Dependent Variables:	
CEO Total Cash	Natural Logarithm of the summation of reported incentive and non-incentive cash components
CEO Annual Incentive Cash	Natural Logarithm of Reported annual incentive cash reward
Performance Variables:	
Real Returns	(price at t + Dividend less Price at t-1)/price at t-1)
3Yr Real Returns	Accumulated average return= $[(1+R_t)(1+R_{t-1})(1+R_{t-2}) - 1]$ where R=return to stock or TSR.
ROE	ROE=NPAT before abnormal/(shareholder equity-outside equity interests)
Control Variables:	
Size	Total Assets
Firm Risk	Aggarwal and Samwick's Cumulative Distribution Function of firm real returns. The measure is between 1 and 0 with 1 as the maximum level of volatility.
Turnover Variables:	
Incoming CEOs	1 = first year in the position as CEO and 0 if otherwise
Outgoing CEOs	1 = Last year in the position as CEO and 0 if otherwise
Instruments for Performance Variables:	
Industry Mean for Real Returns	Mean by Industry and year using S&P/ASX Sectoral indices (n=10) ^a
Industry Mean for 3Yr Returns	Mean by Industry and year using S&P/ASX Sectoral indices (n=10) ^a
Industry Mean for Accounting Return	Mean by Industry and year using S&P/ASX Sectoral indices (n=10) ^a

a Excludes Financials property trusts, Gold sub-industry, Metals and Mining, and Property Trusts due to differential executive reward and/or accounting performance reporting requirements. GICS industry sectors included Consumer Discretionary, Consumer Staples, Energy, Financials, HealthCare, Materials, Information Technology, Telecommunications Services, and Utilities.

6.3 Descriptive Results

Exhibit 6.2 presents the annual means for nominal Australian dollar values), of CEO salary, annual incentive cash reward, total non-incentive cash reward, and total CEO cash reward. Unless otherwise indicated, all dollar values henceforth refer to Australian dollars. As shown, these figures indicate an increasing trend in the level of all CEO cash reward measures over the period.¹⁷

¹⁷ The figure for annual incentive cash in 1999 appears to be somewhat anomalous compared to the preceding figures. There may be several explanations for this. First, outliers among nominal un-adjusted values may have caused this skewing, and would appear to warrant a linear logarithmic transformation to ameliorate this. Second,

Exhibit 6.2. Nominal \$AU Annual Means for CEO Salary, Annual Cash Incentives, Total Non-incentive Cash (TNIC), and Total CEO Cash Reward.

Balance Year	Salary_Year t	Annual Incentive Cash_Year t	TNIC_Year t	CEO Total Cash Year t
1999	214,013	91,845	269,855	280,854
2000	352627	354704	453778	577127
2001	392741	415903	501636	639798
2002	412985	503313	587319	754192
2003	426521	525021	530515	736331
2004	461906	543490	625576	863804
2005	474065	699144	599660	916840
2006	547750	649677	710337	1029703

Exhibit 6.3 reports the annual mean values of CEO stock holdings and the volume of CEO option and share rights held at report date. According to these figures, CEO equity holdings have also increased over the period. However, there does not appear to be an increasing trend in CEO stockholdings as a percentage of total shares outstanding.

Exhibit 6.3. Annual Means for CEO Shareholdings, Shareholdings as a Percentage of Total Shares Outstanding, and Volume of CEO Options and Share Rights.

Balance Year	Volume of shareholdings			Volume of options and share rights held	
	Shares held by CEO	Firms observed	Shares held by CEO as a percentage of total shares outstanding	Volume of options and share rights	Firms observed
1999	6,698,000	425	8.07	2,423,394	236
2000	11,000,000	462	9.48	2,122,538	274
2001	12,900,000	471	10.26	2,447,446	267
2002	15,100,000	454	10.22	2,808,593	279
2003	14,300,000	445	9.62	2,681,303	280
2004	11,500,000	447	8.04	2,959,651	264
2005	11,900,000	416	7.94	3,208,352	250
2006	13,600,000	428	6.78	3,115,083	249

the anomaly may be explained in terms of the changes in reporting requirements during this stage, from banded to component specific disclosure of CEO reward. It is interesting that other fixed reward components were non-anomalous.

6.4 Inferential Results

Exhibits 6.4 and 6.5 present the summary statistics and bivariate correlations for the variables operationalised to test the relationship between CEO total cash reward, annual incentive cash reward, and three specified performance measures. On the basis of diagnostic analyses examining skewness and kurtosis, all dollar values were inflation-adjusted and then transformed into natural logarithms. According to the bivariate Pearson correlation coefficients, the magnitude of all the bivariate associations among explanatory variables does not suggest collinearity. The association among dependent variables and their attendant lags are strongly correlated which suggests that serial correlation and autoregressive disturbances may potentially contaminate reward-performance estimates in the absence of the specification of a lagged dependent variable in the x vector. *A prima facie* examination of the bivariate correlation results reveals that the performance measures are weakly or negatively related to total cash and incentive cash.

Exhibit 6.4. Means and Standard Deviations (S.D) for Firm and CEO-level Variables

Variable	Mean	S.D	N
Dependent Variables:			
CEO Total Cash _t	843,267	22,106	3,034
CEO Annual Incentive Cash _t	329,702	13,986	3,034
Performance Variables:			
Real Returns _{t-1}	12.520	1.480	3,034
3Yr Returns _{t-1}	53.010	3.090	3,034
ROE _{t-1}	-8.440	1.480	3,034
Control Variables:			
Size _{t-1}	3630	456	3,034
FirmRisk _t	0.510	0.005	3,034
Incoming CEOs _t	0.151	0.007	692
Outgoing CEOs _t	0.126	0.006	628

Exhibit 6.5. Pearson's Bivariate Correlations^a

Variable	Mean	s.e	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 CEO Total Cash ^b	13.18	0.02	1.00													
2 CEO Total Cash _{t-1} ^b	13.17	0.02	.90***	1.00												
3 CEO Annual Incentive Cash ^b	11.81	0.02	.79***	.75***	1.00											
4 CEO Annual Incentive Cash _{t-1} ^b	11.80	0.02	.73***	0.79***	.90***	1.00										
5 Real Returns _t ^c	13.25	1.40	0.03	0.00	-0.01	0.00	1.00									
6 Real Returns _t ^c	12.77	1.35	-0.01	-0.02	0.00	-0.02	0.03	1.00								
7 3Yr Returns _{t-1} ^c	54.61	3.13	.05**	.04*	0.00	0.00	.42***	-.10***	1.00							
8 3Yr Returns _t ^c	57.46	2.74	.04*	0.01	0.00	0.00	.52***	.44***	.65***	1.00						
9 ROE _{t-1} ^c	-5.54	1.28	.12***	0.10***	.04*	-.03*	.15***	.06***	.06**	.09***	1.00					
10 ROE _t ^c	-7.48	1.52	.11***	.11***	.04**	0.03	.08***	.15***	0.00	.07***	.31***	1.00				
11 Size _{t-1} ^a	18.57	0.04	0.65***	.61***	.04***	.37***	0.02	-0.03	.06**	0.00	.28***	.24***	1.00			
12 Firm Risk _t	0.51	0.01	-0.04***	-.36***	-.22***	-.20***	0.03	.04*	.08***	.08***	-.29***	-.27***	-.66***	1.00		
13 Incoming CEOs _t	0.15	0.01	-.02***	-0.02	-.04**	-0.03	-.07***	-0.02	-.04*	-.05**	-.07***	-.04**	-.08***	.10***	1.00	
14 Outgoing CEOs _t	0.13	0.01	-0.02	-0.02	-0.03	-0.02	-.06***	.08***	0.00	-.05**	-.07***	-.07***	-.05***	.09***	0.00	1.00

^a N= 2774 (Listwise exclusion)

^b Natural Logarithm

^c Real annual percentage

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Exhibit 6.6. Fixed Effects, IV, and System GMM Estimates of CEO Total Cash Reward^a-Performance Sensitivity

Estimator:	FE	IV	GMM
Market Return:			
Real Returns ^b _{t-1}	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Real Returns ^b _t	0.000 (0.00)	0.001 (0.001)	0.000 (0.001)
3Yr Returns ^b _{t-1}	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
3Yr Returns ^b _t	0.000 (0.001)	0.000 (0.001)	0.000 (0.00)
Accounting Return:			
ROE ^b _{t-1}	-0.001 (0.00)	-0.001 (0.002)	-0.001* 0.000
ROE ^b _t	-.001* (0.00)	-0.001 (0.002)	0.000 0.000
Controls			
Size ^b _{t-1}	0.122*** (0.017)	0.162 (0.09)	0.094*** (0.026)
Firm Risk _{t-1}	-0.008 (0.10)	-0.162 (0.111)	.173* (0.08)
CEO Total Cash Reward ^a _{t-1}	0.284*** (0.034)	0.214*** (0.039)	0.764*** (0.078)
Incoming CEOs ^c _t	-0.182*** (0.022)	-0.207*** (0.035)	-0.255*** (0.027)
Outgoing CEOs ^c _t	0.073** (0.027)	0.053* (0.026)	0.074* (0.031)
Constant	7.154*** (0.492)	7.406*** (1.337)	1.312 (.722)
Observations	2775	2457	2775
R ²	0.74***		
Year Dummies	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes
Davidson McKinnon Test of Exogeneity		<i>F</i> =2.223*	
Hansen J Test of Overidentifying Restrictions			$\chi^2=124.46$
Arellano-Bond test for AR(2) in first differences			<i>z</i> =2.73

^a Natural Logarithm

^b Percentage

^c Binary Variable

* *p* < 0.05

** *p* < 0.01

*** *p* < 0.001

Robust Standard errors in parenthesis

Exhibit 6.6 reports the results of the regression analyses estimating both the lagged and contemporaneous relationship between Total CEO cash reward and the three firm-level performance measures using a fixed effects (FE) estimator, instrumental variables (IV) or 2 step least squares estimator, and a two-step system GMM estimator.

To recap, the primary aim of this chapter is to estimate the *ceteris paribus* lagged relationship between CEO cash rewards and three firm-level performance measures. Hypotheses 6.1-6.3 predicted a significant positive association between the three performance measures and the level of CEO total cash rewards.

Hypotheses 6.1 and 6.2 test the explanatory power of two inflation-adjusted market return measures. On the basis of the results presented in Exhibit 6.6 both hypotheses are consistently rejected. Across all three specifications, the lagged estimates of the hypothesised association are non-significant. In terms of the predicted direction of the hypothesised association, all estimated coefficients were positive for annual Real Returns. Almost all estimates were in the predicted direction for three year cumulative stock returns; for the system GMM, the coefficient was negative. Finally, all contemporaneous associations between the level of CEO total cash reward and two market-level performance measures were non-significant and inconsistent with the directionality of their lagged measures of three year stock returns, and in the IV specification for annual real stock returns.

Hypothesis 6.3 predicted a positive and significant association between lagged ROE and the level of CEO total cash reward. On the basis of results presented in Exhibit 6.6, this hypothesis is rejected. The lagged effect of ROE on the level of CEO total cash reward is non-significant across all specifications, and the majority of these estimated coefficients are negative. A significant contemporaneous relationship between ROE and the level of CEO total cash rewards was found in the fixed effects and system GMM specifications ($\beta = -0.0004$, $p < .001$; $\beta = -.0011$, $p < 0.05$ respectively). These results imply an inverse contemporaneous relationship between ROE and the level of CEO total cash reward.

While all three firm-level performance measures lacked power in terms of explaining variation in the level of CEO total cash reward, some of the theoretically informed controls operationalised had robust effects on the dependent variable. The lagged effect of the size measure on CEO total cash reward was positive and significant at the point 0.001 and 0.05

levels for the GMM and fixed effects estimates respectively, but not for the IV regression. This suggests that, after controlling for endogeneity, as per the IV specification, the coefficient was rendered non-significant. This suggests that endogeneity results in a positively biased estimate for the lagged effect of firm size. However, the GMM, addressing endogeneity, omitted variables, and serial correlation, yields a significant and positive coefficient for firm size.

Agency Theory is premised on the assumption that agent incentive contracts are, *inter alia*, subject to agent risk preferences. To recapitulate, agency theory suggests agents are risk averse, and on the basis of recent empirical evidence (Aggarwal and Samwick, 1999a; Mishra *et al.*, 2000) firm risk is a significant predictor of reward level and composition. The following chapter discusses this literature in terms of the moderating effects of risk on the reward-performance relationship. The results presented in this chapter indicate that while the effect of firm risk is not consistent in terms of directionality and significance across all specifications, it is significant and positive at the 0.05 level for the GMM estimator. The estimated coefficient suggests that as firm risk increases, the level of CEO total cash reward also increases. This result is consistent with the theory and research evidence suggesting that incentives and firm risk are inversely related (Aggarwal and Samwick, 1999a; Mishra *et al.*, 2000).

Various CEO-level measures were also specified as controls. As expected, Incoming CEOs receive significantly lower levels of total cash, and this is robust across all specifications. As expected, outgoing CEOs receive significantly more total cash rewards than incumbent CEOs, and again this result is robust across all three specifications. The estimates suggest that outgoing CEOs, on average, receive significantly more total cash reward than non-outgoing CEOs, whereas, incoming CEOs received significantly less total cash reward than non-incoming CEOs.¹⁸

¹⁸ Scholarship in both the Agency Theory paradigm and the burgeoning Managerial Power paradigm suggests that CEO reward is a positive function of CEO tenure. Perhaps of more tangential significance, however, there is marked inconsistency in how CEO tenure is operationalised and theorised. Positional and organizational tenure may have differential affects, and can be measured in different ways. Given these ambiguities, this study operationalised a simple and time invariant measure of organisational tenure - and that is, whether the CEO was internally appointed. Bebchuk and Fried (2004) suggest that internally appointed CEOs may have already crystallized their managerial power prior to be appointed to the position. Accordingly, a naive hypothesis was advanced that internally appointed CEOs may have rewards that are significantly different to externally appointed CEOs. This measure also serves as an important CEO-level control. The effects of the dummy variable was negative across all specifications, yet was also non-significant. An alternative time-variant measure of organizational tenure was used by interacting the dummy variable with year dummy variables to account for

The CEO cash reward-performance relationship was tested across three different specifications. Research on this relationship has commonly specified a first-difference approach to parameter estimation, chiefly to expunge unobserved fixed effects. However, as mentioned, the fixed effects models are still prone to endogeneity, especially when a dynamic functional form is specified (see Jensen and Murphy, 1990). By way of illustration, annual changes in performance may be attributed to unobserved factors such as industry performance or managerial ability, for example. It is for this reason that a level equation was specified and estimated along with a fixed effects model, using an IV regression. The rationale of using this technique was to test whether the performance variables were potentially endogenous. The IV technique is used to expunge the endogenous explanatory variables of unobserved effects that render them correlated with the error term through a reduced form equation (see Sayrs, 1989, for further discussion).

Exhibit 6.7 presents the results for the first-stage and reduced form regressions of the IV estimator. In the first stage, the IV estimator regresses all purportedly endogenous and predetermined variables on both instruments and x vector exogenous variables. The estimated coefficients suggest that the main effects of the instrumental variables on CEO total cash reward are non-significant, but that the instrumental variables have significant main effects on the suspected endogenous performance variables.

According to the results, all instruments have significant main effects on the suspected endogenous explanatory variables in the reduced form equations, and no significant main effect on the dependent variable, except through performance. This was the first identification strategy. The results suggest that these industry-level effects on performance should be an important consideration in the specification of reward-performance models. It is intuitive that the level of CEO total cash reward in the previous period may be indirectly explained by industry-level total cash. This is consistent with the practitioner argument that attraction and retention reward geared to enhancing the firm's competitiveness in the relevant executive labour market are important aims in the design and determination of CEO cash reward.

the possibility that the effect of organizational tenure is cumulative over time. The results remained substantively unchanged, and the measure was thus excluded from further analysis.

Besides being predicated on theoretical propositions stemming from a more constructive and process-oriented model of CEO cash reward and performance, the results also indicate that both the rank and order conditions for identification have been met. First, there are as many instruments as there are endogenous regressors. Second, the choice of instruments is appropriate such that the model has not been over-identified as shown above (see Wooldridge, 2001, for further explanation).

Furthermore, these results provide evidence suggestive of endogeneity, on the one hand, and of the relevance of instruments, on the other. They also suggest that the classical linear assumptions underlying OLS have been violated given that performance measures are not strictly endogenous. Finally, to test for the overidentification of the IV estimator, estimated residuals from second-stage IV were regressed on all exogenous explanatory variables and instruments (see Wooldridge, 2001) and the results produced were non-significant.

In addition, to corroborate the evidence provided in Exhibit 6.6, the Davidson-MacKinnon test was conducted to test the null hypothesis that the estimates from our fixed effects estimator are consistent with our IV estimator. The null hypothesis is rejected ($F_{5,916}=2.1870$, $p<.05$), suggesting that endogeneity is a legitimate source of inconsistency between the two specifications, and that performance variables should be treated as endogenous. The test implies that OLS estimates of the model are significantly inconsistent with IV estimates and such an inconsistency is attributable to one or more explanatory variables not being strictly exogenous.

However, the correlation between the x vector and the disturbance vector ($\rho=0.8155$) in the second stage of the IV regression suggests that unexplained variance still remains a potential source of contamination, perhaps stemming from the dynamism attendant to our empirical specification. In other words, one or more explanatory variables are endogenous with respect to the error term, thus the IV estimator appears to be inefficient in terms of orthogonality. The IV regression is premised on a static model (for a discussion of the implications of this for dynamic panels see Wooldridge, 2001).

Exhibit 6.7. First Stage Results for CEO Total Cash Reward

Instrumental Variables	Instrumented Variables					
	Real Return t-1	3Yr Returns t-1	ROE t-1	Real Return t	3Yr Returns t	ROE t
Size t_{-1}	-6.059 (3.514)	36.733*** (7.006)	30.809*** (2.853)	-34.428*** (3.185)	-12.446* (6.295)	-12.270*** (3.592)
Firm Risk t_{-1}	70.522*** (19.644)	279.125*** (38.078)	6.561 (15.507)	31.804 (17.310)	219.043*** (34.215)	7.714 (19.522)
CEO Total Cash Reward t_{-1}	-1.196 (5.068)	12.039 (9.825)	-14.803*** (4.001)	-6.237 (4.466)	-0.773 (8.828)	-0.558 (5.037)
IndustryMean Real Returns t_{-1}	0.914*** (0.194)	0.426 (0.375)	-0.053 (0.153)	0.145 (0.171)	-0.228 (0.337)	0.287 (0.193)
IndustryMean 3Yr Return t_{-1}	-0.033 (0.035)	0.547*** (0.068)	-0.021 (0.028)	-0.012 (0.031)	-0.003 (0.061)	0.016 (0.035)
Industry Mean ROE t_{-1}	-0.168 (-0.231)	-0.64 (0.447)	0.458** (0.182)	-0.195 (0.203)	-0.238 (0.402)	-0.071 (0.229)
IndustryMean Real Returns t	-0.269 (0.191)	-1.237*** (0.369)	0.183 (0.150)	1.102*** (0.168)	-0.335 (0.332)	0.102 (0.189)
IndustryMean 3Yr Return t	0.154** (0.556)	0.928*** (0.426)	-0.008 (0.044)	0.018 (0.049)	1.262*** (0.097)	-0.065 (0.055)
IndustryMean ROE t	0.054 (0.279)	-0.605 (0.541)	0.096 (0.220)	-0.237 (0.246)	-0.316 (0.486)	0.710** (0.277)
Constant	91.62 (88.346)	-1039.911*** (171.251)	-371.318*** (69.741)	701.88*** (77.849)	115.828 (153.888)	229.152** (87.797)
Observations	2456	2456	2456	2456	2456	2456
R ² Change (Stage-Two)	0.027***	0.113***	0.108***	0.006***	0.06***	0.03***
Year Dummies	yes	yes	yes	yes	yes	yes
Fixed Effects	yes	yes	yes	yes	yes	yes

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors in parenthesis

The system GMM specification was used to address potential endogeneity in the x-vector, as well as higher-order autoregressive processes which can be characteristic of dynamic panel models (see Wooldridge, 2001 and 2003). This may also explain the inconsistencies in estimates of IV and system GMM specifications. The system GMM is considered to yield the most efficient estimates for a dynamic panel model. In the first stage, the level equation is instrumented using their first differences, and first differences are instrumented using lagged levels of x-vector variables. The second step uses strictly exogenous explanatory variables in the model - in this case year dummies and CEO turnover dummies - in addition to the

instruments industry-level performance means, to orthogonalise the suspected explanatory variables. By implication, the system GMM addresses all possible sources of contamination for dynamic panel models, including unobserved fixed effects, endogeneity, and autocorrelation. Indeed, the results from the GMM also indicate that the GMM system of equations is not over-identified, nor does have second-order autoregressive processes in its instruments (see Roodman, 2007 for further explication). Exhibit 6.6 reports the results from a Hansen J test, which tests the validity of the system GMM instruments. The Hansen J test for over identification tests the null hypothesis that the system GMM is over-identified. The null is supported and suggests that the model is not over identified, and the instruments in the system of equations are valid ($\chi^2=124.46, p > z=1.000$). In other words, specifications tests support the specification of the model as a two-step GMM. The Hansen J test provides further support that the instruments used on the moment conditions are appropriate (See Baum, Schaffer, and Stillman, 2007). In other words this calls into question the validity of estimating the reward-performance relationship using first-differences, a point that will be revisited shortly.

Exhibit 6.8 reports the results of the regression analyses estimating the relationship between CEO annual incentive cash reward and the three firm-level performance measures across three specifications. All estimates include year and firm dummies and all standard errors are robust to potential heteroscedasticity.

Exhibit 6.8. Fixed Effects, IV, and System GMM Estimates of CEO Annual Incentive Cash Reward-Performance Sensitivity

Dependent Variable: CEO Annual Incentive Cash^a			
Estimator:	FE	IV	GMM
Market Return:			
Real Returns ^b _{t-1}	0.000 (0.001)	-0.001 (0.002)	0.000 (0.00)
Real Returns ^b _t	0.000 (0.001)	0.000 (0.002)	0.001 (0.001)
3Yr Returns ^b _{t-1}	0.000 (0.001)	0.001 (0.001)	0.000 (0.00)
3Yr Returns ^b _t	0.000 (0.001)	0.000 (0.001)	0.000 (0.00)
Accounting Return:			
ROE ^b _{t-1}	0.000 (0.00)	0.003 (0.004)	0.000 (0.00)
ROE ^b _t	0.000 (0.00)	-0.003 (0.003)	0.001 (0.00)
Controls:			
Size ^a _{t-1}	0.044* (0.022)	-0.116 (0.151)	.071* (0.032)
Firm Risk _{t-1}	0.018 (0.119)	-0.165 (0.192)	0.0248 (0.137)
CEO Annual Incentive Cash ^a _{t-1}	.450*** (0.041)	.387*** (0.027)	.813*** (0.057)
Incoming CEOs ^b _t	-0.056 (0.032)	-0.055 (0.065)	-0.039 (0.03)
Outgoing CEOs ^b _t	-0.06 (0.034)	-0.087 (0.046)	-0.046 (0.032)
Constant	5.557*** (0.611)	9.565*** (2.885)	0.89 (0.553)
Observations	2775	2456	2774
Adjusted R ²	0.81***		
Year Dummies	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes
Davidson McKinnon Test of Exogeneity		<i>F</i> =2.500*	
Hansen test of Overidentifying Restrictions			$\chi^2=133.85$
Arellano-Bond test for AR(2) in first differences			<i>z</i> =2.23

^aNatural Logarithm

^bPercentage

^cBinary Variable

* *p* < 0.05

** *p* < 0.01

*** *p* < 0.001

Robust standard errors in parenthesis

Hypotheses 6.4 and 6.5 predicted positive associations between the two market-return measures specified and the level of CEO annual incentive cash reward. According to the results for all three specifications, there is a non-significant lagged and contemporaneous association between the two performance measures and the level of CEO annual incentive cash reward. Further, for the lagged measures, estimates are consistent with their predicted directionality for most specifications.

The coefficients were negative and non-significant for annual lagged real returns in the IV specification, and for three-year inflation adjusted cumulative stock returns (3Yr Returns) in the GMM specification. Consequently, these results do not furnish support for hypotheses 6.4 and 6.5. The Hansen J Statistic suggests that the GMM is correctly specified and has valid instruments.

Hypothesis 6.6 predicted a significant positive association between the level of CEO annual incentive cash reward, and lagged ROE. According to the estimated coefficients, this prediction was not supported by any of the specifications. All estimates were non-significant and negative in the fixed effects and GMM specifications, and positive and non-significant in the IV regression. In addition, across all specifications, the contemporaneous association between the level of annual incentive cash and ROE was non-significant. As such, Hypothesis 6.6 was not supported by the estimates.

These results prompted auxiliary sensitivity analyses with alternative accounting-based and market performance measures. Our measures are consistent with typical performance measures used by company boards to determine reward (see Bender and Moir, 2006). Accordingly, in auxiliary regression analyses, the level of CEO annual incentive cash was regressed on alternative firm-level performance measures operationalised in previous studies. These measures included, ROA and ROIC (see Chapter Five for explication). However, these measures did not provide incremental explanatory power according to joint significance tests, and such results were not reported.

Finally, dummy variables for negative returns were used as explanatory variables to account for the possibility of asymmetric sensitivity and the Agency-based notions of 'ex post settling up' (see Bender, 2004; Dechow, 2006; Leone, Wu, and Zimmer, 2006). Operationalising a

negative stock return measure failed to provide any incremental explanatory power, as the estimated coefficients were not statistically significant from zero.

Turning to the other controls, the lagged effect of firm size was positive and significant in both the GMM and fixed effects specifications. According to the estimated coefficients, an increase in firm size, as expected, was associated with an increase in the level of purported and reported incentive cash. This may be further explained by firm size affecting the level of salary, which is commonly used as a basis for incentive awards (Ellig, 2003). While firm risk was predicted to increase in the level of total CEO cash reward, it did not have a significant effect in either direction on the level of CEO annual incentive cash reward. This result is inconsistent with research evidence that risk and incentive reward are inversely related (see Aggarwal and Samwick, 1999a; and Mishra *et al.*, 2000 for examples). In contrast to the total cash model results, turnover episodes were not significant predictors of the level of CEO annual incentive cash reward, even though significant negative effects were predicted.

Exhibit 6.9 reports the results of the first stage results of the IV regression. The results suggest that the instruments are appropriate on the basis of predicting variation in purported endogenous variables whilst having non-significant effects on the dependent variable. Also, according to the Davidson McKinnon test in Exhibit 6.9, one or more predictors in the empirical model are not strictly exogenous, thus precipitating inconsistencies in estimates from OLS fixed effects, and IV regressions ($F_{(6,1926)}=2.499, p<.05$).

However, the correlation between the x vector and unexplained variance in the IV estimator ($p=0.4210$) - not reported here - suggests that while the IV addresses endogeneity stemming from omitted variable bias, it does not address the endogeneity stemming from the autoregressive processes characteristic of dynamic panel models. Also, results from the Hansen overidentification test confirm that instruments in the system are valid ($\chi^2=133.85, p>z=1.000$). Overall, the results in Exhibit 6.9 suggest that the first-order autoregressive process needs to be addressed as a potential source of contamination, and that extant studies based on first-differenced estimates of the reward-performance relationship (see Merhebi *et al.*, 2006 for an example), are biased by endogeneity stemming from autoregressive disturbances.

Exhibit 6.9. First Stage Results of IV Regression for CEO Annual Incentive Cash Reward

Instrumental Variables	Instrumented Variables					
	Real Return _{t-1}	3Yr Returns _{t-1}	ROE _{t-1}	Real Return _t	3Yr Returns _t	ROE _t
Size _{t-1}	-6.52 (3.570)	37.375*** (6.918)	29.234*** (2.812)	-34.909*** (3.150)	-13.031* (6.219)	-12.145*** (3.551)
Firm Risk _{t-1}	70.003*** (19.627)	277.207 (38.025)	7.294 (15.564)	32.432 (17.314)	218.127 (34.185)	8.049 (19.521)
CEO Annual Incentives Cash _{t-1}	6.360* (3.027)	15.682** (5.864)	-0.856 (2.400)	-3.912 (2.670)	10.683 (5.272)	-3.432 (3.010)
IndustryMean Real Returns _{t-1}	0.913*** (0.194)	0.422 (0.375)	-0.043 (0.154)	0.15 (0.171)	-0.228 (0.337)	0.289 (0.193)
IndustryMean 3Yr Return _{t-1}	-0.319 (0.352)	0.551*** (0.068)	-0.022 (0.028)	0.011 (0.031)	-0.001 (0.613)	0.016 (0.035)
Industry Mean ROE _{t-1}	-0.154 (0.231)	-0.599 (0.447)	0.458** (0.183)	-0.203 (0.204)	-0.211 (0.402)	-0.077 (0.229)
IndustryMean Real Returns _t	-0.254 (0.191)	-1.203*** (0.037)	0.193 (0.151)	1.097*** (0.168)	-0.031 (0.332)	0.095 (0.190)
IndustryMean 3Yr Return _t	0.155** (0.056)	0.929*** (0.108)	-0.006 (0.044)	0.019 (0.049)	1.264*** (0.097)	-0.065 (0.055)
IndustryMean ROE _t	0.068 (0.278)	-0.561 (0.540)	0.09 (0.021)	-0.248 (0.246)	-0.335 (0.486)	0.702** (0.277)
Constant	12.603 (75.887)	1051.119*** (147.023)	-539.778*** (60.178)	668.227*** (66.945)	-1.956 (132.175)	258.595*** (75.478)
Observations	2456	2456	2456	2456	2456	2456
R ² Change (Stage two)	0.028***	0.105***	0.103***	0.007***	0.059***	0.028***
Year Dummies	yes	yes	yes	yes	yes	yes
Fixed Effects	No	No	No	No	No	No

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

.001

Robust Standard Errors in parenthesis

After controlling for endogeneity, stemming from both omitted variables and autoregressive processes, the effects of all performance variables on both total cash reward and annual incentive cash reward are non-significant, and on this basis Hypothesis 6.1-6 are rejected.

Size, however, measured by total assets, has a robust positive lagged effect on both dependent variables at the 0.001 level of significance. This tells us that as size increases, the level of CEO total cash, and annual incentive cash reward, increases.

6.5 Discussion

We have used three different estimators to test the sensitivity of reported CEO cash rewards to two measures of firm-level performance, and determine whether it is more appropriate to estimate reward performance sensitivity through more rigorous econometric techniques appropriate for dynamic panel models.

Hypothesis 6.1 predicted a significant positive lagged association between real stock returns and the natural logarithm of CEO total cash reward. On the basis of the results of the three specifications, this hypothesis was rejected. Moreover, estimates were inconsistent across all three specifications in terms of directionality and magnitude. According to the IV estimates, lagged annual real returns negatively predict the level of CEO total cash rewards. The system GMM specification did not yield significant estimates for real returns.

Hypothesis 6.2 predicted a positive lagged association between CEO total cash reward, and three-year lagged cumulative real stock returns (3 year returns). This hypothesis was partially supported, but was not robust across all specifications. Both the fixed effects and instrumental variable specifications yielded significant positive coefficients for three year cumulative returns. However, this effect did not persist in the system GMM estimates. These results suggest that common sources of contamination attendant to dynamic panel models may be biasing the two other specifications' estimates (see Sayrs, 1989), and are suggestive of dynamic misspecification. Indeed, upon further examination of the disturbances, a significant correlation between the x vector and disturbances in IV regressions was found to persist even after the IV estimator controlled for endogeneity by instrumenting performance variables. This suggests that the IV regression did not improve the orthogonality of the explanatory variables. These results reinforce the importance of using econometric techniques appropriate for dynamic panel models.

According to the results, the main effect of lagged ROE on CEO total cash reward was contrary to prediction implicit in Hypothesis 6.3. The fixed effects model provided a

significant negative estimated coefficient; however such an association failed to persist once endogeneity and serial correlation were accounted for in the system GMM estimates.

Hypothesis 6.4 predicted a significant positive lagged association between real returns and the level of CEO annual incentive cash reward. The results failed to support this prediction. The estimated coefficients on lagged real returns were inconsistent both in terms of directionality and magnitude across all specifications. For the IV specification, the estimated coefficient was significant and negative, implying that the level of incentive cash is inversely related to real returns. The GMM estimates did not yield a significant coefficient in either direction. In addition, the Hypothesised association between lagged three-year cumulative real stock returns (3Yr Returns) and CEO annual incentive cash reward was non-significant. On this basis, Hypothesis 6.5 was rejected. One important rationale for using this measure was to account for multi-period performance appraisals by the board. Also, such a measure was deemed to be highly construct valid explanatory variable given that it is a commonly used measure in CEO annual incentive plans (Bender and Moir, 2006).

Finally, Hypothesis 6.6 predicted a significant association between CEO annual incentive cash reward and lagged ROE. Again, and contrary to prediction, results indicated a negative and significant coefficient for the fixed effects specification, and non-significant coefficients for the remaining specifications.

Specification tests for overidentification, as well as the inconsistencies in estimated coefficients both in terms of significance and directionality, suggest that both endogeneity and serial correlation were sources of contamination and measurement error in both fixed effects and IV specifications. Again, such results suggest that the econometric techniques appropriate for dynamic panel models are important to safeguard the integrity of estimates, and their subsequent inferential validity.

The results have some important implications for the empirical specification of the reward-performance relationship, on the one hand, and the estimation of the resultant model, on the other hand. First, the results suggest that classic linear model assumptions regarding the orthogonality of explanatory variables were violated, and that OLS assumptions predicated on static models rather than dynamic models may be inappropriate when testing the CEO reward-performance relationship (see Sayrs, 1989). This is because serial correlation and the

autoregressive processes in the error vector stemming from dynamic misspecification are meaningful sources of contamination in dynamic panel models. This has certainly been overlooked by the extant empirical literature, despite the suggestion by early authors that performance variables themselves can exhibit positive autocorrelation (see Lambert and Larcker, 1987: 92).

These results question the integrity of estimation techniques in previous research based on first difference estimators and, consequently, the reliability the estimates reported (Kerr and Kren, 1992; Jensen and Meckling, 1991; and Merhebi *et al.*, 2006). It is quite plausible then, that the significant associations reported in prior research, irrespective of directionality and magnitude, are potentially a methodological artefact, and thus have limited inferential or analytical significance. In particular, the claim by Merhebi *et al.* (2006), that Australian CEO total cash reward in recent times is a 'non-anomaly' as compared to previous sensitivity research further afield, is a questionable contention in view of the these considerations and the results reported, at least with respect to cash reward. The results in this chapter also challenge the contention made by Merhebi *et al.*, (2006), that Australian boards are promulgating CEO reward for performance. The results from system GMM specifications suggest first difference and fixed effects estimates are inefficient. Indeed, the GMM results reported in this chapter suggest significant first and second order autoregressive disturbances among the first differences of explanatory variables. Again, this confirms that OLS first-differences estimates of the CEO reward and performance relationship may be inconsistent, especially when orthogonality conditions have been violated (see Ostrom, 1990).

Each of the three estimation techniques used have different implications for the error term and the x vector. The system GMM is especially efficient when dealing with multiple endogenous regressors (Roodman, 2006). The merit of the two-step system GMM is that it is appropriate for the complex error structure attendant to dynamic panel data (Baum *et al.*, 2007; Blundell and Bond, 1998; Roodman, 2007). It addresses two sources of possible endogeneity: first, omitted variable bias due to endogenous and predetermined explanatory variables (Blundell and Bond, 1998); and second, the serial correlation in both the x and disturbance vector that transpires when specifying lagged dependent and explanatory variable in the x vector. Chapter five provided a more exacting analysis of the relative benefits of using a two-step system GMM approach to parameter estimation. Further, even after

addressing orthogonality in a two-step system GMM, the non-significance of the CEO reward- performance relationship persisted.

The approach taken here has attempted to minimize error in estimation and in measurement. Lambert and Larcker (1987) suggest that the theoretical and empirical specification of the sensitivity of reward to performance needs to account for the possibility of boards placing differential weight on accounting and market return performance. The empirical model specified here is predicated on the assumption that CEO rewards are based on a multidimensional and multi-period assessment of CEO performance. However, despite using a range of metrics for performance (commonly used in extant empirical research), both accounting and market return measures failed to explain variation in both the level of CEO total cash reward and also in reported incentive based cash reward, which, by definition, should be performance contingent.

In addition, alternative accounting and market return measures such as ROA, and ROIC (Canyon and Sadler, 2001; Ke, Petroni, and Safieddine, 1999), failed improve or buttress explanatory power. Even auxiliary analyses assessing asymmetric reward-performance sensitivity by using a dummy variable for negative lagged real returns (see Aggarwal and Samwick 1999a for an example) failed to provide incremental increases in the explanatory power. The purpose of this auxiliary analysis was to discern whether boards make downward adjustments to total reward, and at the very least incentive reward, in the event of poor performance (consistent with notions of *ex post* settling up). Leone, Wu and Zimmer (2006) reported evidence of asymmetric sensitivity, where CEO rewards were differentially sensitive to positive and negative returns. However, our results suggest that, consistent with Dechow (2006), Australian boards do not penalize CEO-agents for poor performance through '*ex post* settling up' in cash terms, given that the estimated coefficient on the negative stock return dummy was not statistically significant from zero. The auxiliary results do not suggest that boards make downward adjustments in CEO cash reward in the event of poor performance, even after firm risk has been controlled for; nor do boards use negative discretion formulae when determining CEO cash reward.

There are several important theoretical implications of these results, all of which are considered in the context of the discussions in Chapters Two, Three, and Four. One of the first propositions advanced in Chapter Four is premised on the assumption that boards make

CEO reward decisions on the basis of various economic and structural characteristics. The net effect of these considerations is that CEO rewards are not exclusively contingent on firm-level performance. However, CEO rewards do serve an *ex ante* incentive purpose and, as such, should be sensitive to measures firm-level performance. Overall, the results indicate that CEO total cash reward, and incentive cash reward, are insensitive to both firm-level accounting performance and market-return performance. Thus this study does not furnish support for the proposition that CEO reported cash rewards in aggregate, are aligned to, albeit not exclusively contingent on, firm performance.

Agency Theory assumes, albeit more implicitly, that boards appropriately specify performance measures that are sensitive to agent actions more than random noise as alluded to by Lambert and Larcker (1987). However, the results provide no support for the inference that boards ratify incentive plans which: i) have valid performance targets and measures which are aligned to the strategic and financial interests of the company; ii) incentivise desired and value adding CEO actions, behaviours, and strategic choices; and iii) inform and/or determine appropriate CEO reward outcomes which are correlated with firm-level performance. Thus, it does not appear from the results that the average CEO is rewarded (or punished) in cash terms for neither market-return nor accounting return performance. By extension, it remains unclear whether CEO rewards are based on the board's evaluation of CEO performance against these two variants of firm-level performance. It remains unclear whether boards ratify incentive plans with valid measures and, even if they do so, whether reliable measurement of performance has occurred *ex post*.

The results presented in this chapter provide evidence indicating that boards typically make cash-related rewards decisions on the basis of factors other than accounting and market-return performance. Further, and as a point of conjecture, if this is true of cash-based rewards, including cash incentives, there is also no reason to suppose that it is not also true of board decisions relating to the granting of equity-based rewards.

What is especially perplexing is that annual incentive cash incentives are unrelated to the two common measures of firm-level performance. The implications are fourfold. First, one of the assumptions made at the outset, informed by some of Lambert and Larcker's insights (1987), is that boards may place differential importance on different types of firm-level performance in different contexts. One of the subsidiary predictions made is that CEO total cash, and to a

still greater extent annual cash incentive rewards, would have differential sensitivities to the two types of firm return measures. Nevertheless, performance measures were expected (additively or individually) to explain variation in annual incentive reward at the very least. However, all the system GMM estimated coefficients for the two measures were non-significant, even after several alternative measures were used. Consequently, the results are inconsistent with the Agency Theory prediction that boards manage the agency relationship through performance contingent rewards. In other words, there is no evidence, contrary to Merhebi *et al.* (2006) claims, that boards are using executive rewards to induce CEO-agent-principal alignment. It may also be suggested, in keeping with the Managerial Power perspective, that boards may disclose superficial performance-contingent rewards in an attempt to appease shareholders and critics in accordance with institutional arguments presented at the outset, in conjunction with the Managerial power perspective. More simply, it may also be suggested that this lack of sensitivity, rather than necessarily being a symptom of managerial power, may be an outcome of boards' idiosyncratic decision-making in relation to cash incentive plans. A necessary caveat here is that this study does not test the processes of CEO cash reward determination, but rather the outcomes. Nevertheless, it may be speculated that lack of CEO reward-performance sensitivity may be attributable to a lack of capability or sufficient knowledge to: i) select valid performance targets and measures which are aligned to the strategic, operational, and financial interests of the company; ii) incentivise desired and value-adding CEO actions, behaviours, and strategic choices; and iii) inform and/or determine appropriate CEO reward outcomes which are correlated with firm-level performance. Thus the results provide suggestive support for the contention that Australian Boards may be judging the efficacy of reward actions in relation to CEO cash rewards on the basis of either socio-cognitive integration of information, or uninformed-dispassionate integration of information. In other words, the insensitivity of CEO total cash reward to performance may reflect inefficacious assessments of proposals put forward for board approval that are attributable to either the socio-cognitive processing of information, or a lack of sufficient knowledge or information to process information in a rational and economic fashion. These points are revisited in Chapter Eleven in the context of a discussion of possible avenues for research, theory, and practice in the area of CEO reward and performance.

The results also provide support for the argument that there is a discrepancy between reported performance-contingent cash rewards and our sensitivity analyses. It remains unclear, then,

how the board has constructed and measured 'performance'. Reported performance cash rewards are purportedly performance sensitive. According to remuneration reports, CEO incentive-based rewards are based on an appraisal of CEO performance against the performance standards specified *ex ante*, in the incentive plan. It follows that the board may ratify and disclose valid performance measures and targets in step one, but may then fail to assess CEO performance reliably. Essentially, this decouples CEO cash rewards from firm-level performance. The results presented substantiate Ellig's (2003) suggestion that CEO performance can become a secondary consideration in the management of CEO cash rewards. This argument is consistent with Bender and Moir's (2006: 525) interview data, which showed that board directors reported that one of the most important goals of incentive contracts is to signal desired behaviours to the CEO, even though directors interviewed admitted that these intended incentive effects may not be realised.

Moreover, this discrepancy between reward outcomes and the board's performance ratings suggests bias and measurement error contaminates performance evaluations and reward outcomes. Given that measurement error in the specification and estimation of reward for performance were minimized in a number of ways in this study, it is possible to attribute such error to the board's administration of performance evaluation and reward determination, and to a discrepancy between the CEO reward processes on the one hand, and CEO performance management processes on the other.

It also appears from the results that CEO cash incentive contracts are insulated from downside risk. Auxiliary analyses support this supposition. Certainly, the reported discrepancies between our CEO reward-performance estimates, and reported performance contingency of rewards, provide evidence corroborative of Bender's institutional supposition and interview evidence (2002). The directors interviewed reported that nominally performance contingent rewards were a way to manage shareholder perceptions and especially those of large block holders. This argument is revisited in the forthcoming chapters.

It is perplexing that recent regulatory pressures have provided impetus for increased CEO reward performance contingency on the one hand, and transparency on the other, yet no significant association has been found, at least with respect to cash components of reward. Recent corporate governance reforms relating to executive reward disclosure and corporate

governance structures are commonly assumed, *a priori*, to have increased the efficiency of board monitoring and management of the agency relationship.

While this study has addresses a number of the criticisms canvassed in Chapter Two and Three, and thus furnishes greater precision to make inferences regarding CEO reward and performance, it is not without limitations. First, the reward measures used are not comprehensive, in that they do not include the value of CEO equity-based incentives and, thus underestimate the level of CEO rewards in aggregate. Equally plausible then, the estimates may underestimate the sensitivity of the CEO total reward and performance relationship. This said, however, disaggregating CEO total rewards into specific components, cash and equity components in particular, is conducive to a more nuanced understanding of CEO reward determination. Further, there is no reason to suppose that CEO cash reward-performance sensitivity is not a valid and reliable indicator of overall reward-performance sensitivity.

6.6 Conclusion

This chapter provides *prima facie* empirical support for the misalignment between the level of CEO total cash reward and firm-level performance indexed by both accounting and market-return measures, in Australian public companies for the period 1999-2006. These results show that there is a discrepancy between reported performance sensitive cash rewards and the two performance measures specified. They also suggest that despite recent regulatory pressures in the Australian context to make CEO rewards more performance contingent - and board decision-making more 'independent' and 'accountable' - there are still non-significant lagged associations between the level of annual incentive reward, and measures of firm-level accounting and market-returns.

This finding is even more compelling given that the current study addressed potential sources of contamination stemming from methodologies entrenched in extant empirical literature. The study estimated the relationship using three approaches to parameter estimation to account for the possibility of bias and error stemming from the specification of a dynamic panel model. According to the results, endogeneity, and serial autocorrelation were meaningful sources of contamination. This reinforces the importance and efficiency of using a system GMM that uses identified multi-equations to estimate the relationship between CEO cash reward and performance.

Accordingly, it is believed that many prior studies, including Jensen and Murphy's (1990) celebrated paper, are potentially contaminated by both sources of endogeneity, which first differencing does not redress. Furthermore, this paper makes an important contribution empirically, methodologically, and theoretically to the study of CEO reward and performance. In light of these findings and analyses, the forthcoming chapter tests the moderating effects of total firm risk, and firm size, on the relationship between CEO cash reward and performance.

Chapter Seven

Firm Size and Risk as Moderators of CEO Reward and Performance

7.1 Introduction

The previous chapter examines the *ex post* sensitivity of reported CEO cash reward levels to various criterion-relevant measures of firm-level performance, whilst co-varying out other important explanatory variables such as size, risk, and turnover episodes, to name a few. In so doing, the chapter redresses some potential sources of error in measurement, error in inference, and error in the theoretical specification of CEO reward and performance. It is argued that these sources of contamination limit the extent of legitimate inference regarding the board's effectiveness in managing the CEO reward-performance relationships.

The results presented in Chapter Six indicate that CEO cash rewards levels are non-significantly associated with various performance measures. This dissociation is robust across three different estimators. It is argued that these results furnish evidence indicating that Australian company boards, on average, have been ineffectual in terms of establishing a link between CEO cash rewards and firm-level performance.

Both firm size and variance or riskiness in firm returns have received considered attention in the extant literature as important moderators and determinants of CEO reward. This chapter examines the moderating role of firm size and firm risk on CEO cash reward. The chapter begins by revisiting the body of literature suggesting that firm size and firm risk play an important role in explaining the relationship between CEO cash reward and performance. In so doing, this chapter will explicate the causal logic of the prediction that firm size and risk positively influence levels of CEO total cash reward, but negatively moderate the relationship between CEO cash reward and performance. The results are then discussed in terms of their implications for extant research.

7.2 The Role of Size and Risk: Evidence and Hypotheses

Chapter Four elucidates some of the specific ways in which firm size and firm risk can influence CEO cash reward outcomes. Previous research has shown that firm size also plays an important role in the management and determination of CEO rewards. Tosi *et al.* (2000) report that firm size explained 40% of the explained variance in CEO total reward, whereas

firm-level performance explained less than 5%. Some authors (e.g. Finkelstein and Hambrick, 1988; Finkelstein and Hambrick, 1989; Lippert and Porter, 1997) explain this in terms of firm size being a proxy for firm complexity, and, more specifically, that it proxies operational, financial, and strategic complexity arising from diversification and internationalisation and that size *per se* thus warranting greater levels of fixed rewards to attract and retain CEO talent. Aggarwal and Samwick (1999a) suggest that high volatility in a specified performance criterion transfers considerable uncertainty or reward at risk to the CEO. This in turn makes it difficult to determine the extent to which this volatility in the criterion measure is attributable to CEO actions and decisions, and thus influences the CEO's perceived expectancies in relation to accomplishing performance targets. Research canvassed in Chapter Three substantiates this logic in finding that the higher the variance in firm market returns, the weaker the relationship between CEO cash reward and measures of firm market returns. Research suggests that firm size may also be an important consideration in the board's management of CEO cash reward and performance. As the size of the firm increases, so too does the complexity of firm operations, and capital structures (Eisenhardt, 1989; Lippert and Porter, 1997). This has the effect of making board attributions in relation to CEO performance increasingly difficult and, in turn, diminishes the sensitivity of firm-level performance CEO actions and decision-making. Boards espousing this logic would either make decisions to specify performance measures which may be perceived by the CEO as more easily attainable, or grant the CEO a risk premium for additional risk exposure stemming from being evaluated against firm-level performance (Lippert and Porter, 1997). In keeping with these findings, this chapter tests the following proposition:

Proposition 3: Firm size is positively associated with CEO total cash, and annual incentive cash reward.

Several authors report that stock volatility, a source of external firm risk, negatively moderates the relationship between CEO rewards and firm-level performance (Aggarwal and Samwick, 1999a; Beatty and Zajac, 1994; Core *et al.*, 1999; Lippert and Moore, 1994; Merhebi *et al.*, 2006; Mishra, *et al.*, 2000). As canvassed in Chapters Two and Three, firm risk has important implications for the management of CEO reward and performance, although the nature of the effect remains to be clearly explicated in the literature. Thus, on the basis of these considerations and the extant research evidence, it can be expected that:

H7.1a: There is a significant positive association between firm size and the level of CEO total cash reward.

H7.1b: Firm size negatively and significantly moderates the relationship between firm-level performance measures and CEO total cash rewards in such a way that the relationship is weaker when firm size is high than when it is low.

H7.1c: There is a significant negative association between the level of CEO annual incentive cash rewards and firm size.

H7.1d: Firm size negatively and significantly moderates the relationship between firm-level performance measures and CEO annual cash incentive reward in such a way that the relationship is weaker when firm size is high than when it is low.

It is reasonable to assume that firm risk and firm size are *foci* of board deliberations pertaining to CEO cash reward determination. An assessment of firm risk and firm size can influence the board's choice of performance measures. For example, in the event of high-risk volatility, boards may be more likely to specify relative measures of firm-level performance or use performance measures that are indexed to broader share price movements. This acts to net-out measurement error in CEO performance evaluations and thus the incentive plan is likely to have greater incentive effects. Conversely, boards can evaluate CEO performance against firm-level performance measures more leniently as a way to manage CEO exposure to firm risk or the complexities of managing large corporations. Equally plausibly, CEOs exposed to high levels of external risk may receive higher levels of risk compensation in the form of performance-decoupled rewards, which, in turn, attenuate total rewards from firm-level performance. It is reasonable to propose the following on the basis of these considerations:

Proposition 4a: Firm risk is positively associated with CEO total cash reward.

Proposition 4b: Firm risk is negatively associated with CEO annual incentive cash reward.

In public companies, high firm risk and exposure to speculative investors has the potential to de-motivate CEOs, especially when there is a loss of perceived control over the firm's value in the market. To manage this source of risk in the design of a CEO incentive plan, the board

may place differential weightings on accounting and market return measures (Lambert and Larcker, 1989). It may also place greater importance on relative rather than absolute performance. Thus, firm-risk, may influence the *perceived* difficulty of performance targets as well as the size of performance-contingent reward targets. The board's appraisal of firm risk can also have implications for the composition of CEO reward, particularly the proportion of total reward that is performance-contingent. As evidenced by empirical research (for example Mishra *et al.*, 2000) CEOs exposed to high levels of external risk receive higher levels of fixed rewards to offset additional risk.

Firm risk can also moderate CEO performance evaluations in ways not dissimilar to reward design and architecture. Board directors may evaluate CEO exposure to high firm risk more sympathetically. CEOs exposed to high levels of risk may receive higher levels of risk compensation, in the form of performance-decoupled rewards which in turn attenuate total rewards from firm-level performance. In accordance with this exposition, it is possible to hypothesise the following:

H7.2a: There is a significant positive association between firm risk and the level of CEO total cash reward.

H7.2b: Firm risk negatively and significantly moderates the relationship between firm-level performance measures and CEO total cash reward in such a way that the relationship is weaker when firm size is high than when it is low.

H7.2c: There is a significant negative association between the level of CEO annual incentive cash rewards and firm risk.

H7.2d: Firm risk negatively and significantly moderates the relationship between firm-level performance measures and CEO annual cash incentive reward in such a way that the relationship is weaker when firm size is high than when it is low.

It is shown in Chapter Six, that firm risk and firm size, consistent with extant research, positively influence the level of CEO total cash reward. From a CEO performance evaluation perspective, firm risk and firm size may moderate the extent to which the CEO is paid on the basis of firm-level performance. Based on these empirically supported considerations it is

reasonable to predict that both firm risk and firm size would have similar effects on CEO cash reward, and negatively moderate the relationship between CEO cash reward, and firm-level performance measures.

7.3 The Econometric Model and Estimators

Exhibit 7.1 describes the key variables operationalised in regression analyses.

A dynamic panel data model is used to examine the main and moderator effects of total firm risk and firm size on the relationship between CEO cash reward and firm-level performance.

The dynamic panel model is encapsulated in the following level equation:

$$\begin{aligned}
 CEO_{TotalCash}_{i,t} = & \alpha + \beta_0 CEO_{TotalCash}_{i,t-1} + \beta_1 Size_{i,t-1} + \beta_2 FirmRisk_{i,t} + \\
 & \beta_3 AccountingReturns_{i,t-1} + \beta_4 MarketReturn_{i,t-1} + \beta_5 Size_{i,t-1} * \\
 & AccountingReturns_{i,t-1} + \beta_6 Size_{i,t-1} * MarketReturn_{i,t-1} + \lambda_2 Turnover_{i,t} + \mu_i \\
 & + \varepsilon_{i,t}
 \end{aligned}$$

- Where *Size* is indexed by the natural logarithm of total assets, and *FirmRisk* by the cumulative distribution function of firm returns over the 36 months prior (see Aggarwal and Samwick, 1999a for methodology).
- *AccountingReturn* is measured by real ROE.
- *MarketReturn* is the vector for two market-return measures: one being the real stock returns, which measures returns relative to the risk free rate; the other being a 3 year cumulative real stock return measure to account for the possibility of annual incentives being based on longer and cumulative performance periods.
- The model also specifies interactions between the hypothesized moderators and the two firm-level performance variables terms to test the key hypotheses.
- *Turnover* is the vector for incoming and outgoing CEO dummy variables to control for payments which may be prorated, included severance payments, as well as sign-on payments.
- The equation also controls for unobserved firm-effects through firm dummies, and time effects through year dummies.

This equation is re-estimated using firm-risk as a hypothesized moderator instead on firm size. Instrumental Variable (IV) estimators and system GMM estimators were used to examine the associations among CEO total cash reward, CEO annual incentive cash reward,

firm-level performance, and the hypothesized moderators. Again, these estimators were used because they are suitable for addressing the complex error structure of dynamic panel models, and especially in addressing potential endogeneity. A discussion of the relative merits of these approaches was presented in Chapter Five. Here, too, the system GMM is posited to be more efficient in estimating this relationship

Exhibit 7.1. Variables and Measures

Variables	Measures
Dependent Variables:	
CEO Total Cash Reward	Natural logarithm of the summation of reported incentive and non-incentive cash components
CEO Annual Cash Reward	Natural Logarithm of Reported annual incentive cash
Performance Variables:	
Real Returns	$(\text{price at } t + \text{dividend less price at } t-1)/\text{price at } t-1)$
ROE	ROE=NPAT before abnormal/(shareholder equity-outside equity interests)
3Yr Real Returns	Accumulated average return= $[(1+R_t)(1+R_{t+1})(1+R_{t+2})-1]$ where R=return to stock or TSR.
Moderators:	
Size	Total Assets
Firm Risk	Aggarwal and Samwick's (1999) Cumulative Distribution Function of firm real returns. The measure is between 1 and 0 with 1 as the maximum level of volatility.
Turnover Variables:	
Incoming CEOs	1 = first year in the position as CEO and 0 if otherwise
Outgoing CEOs	1 = Last year in the position as CEO and 0 if otherwise
Instruments for Performance Variables:	
Industry Mean for Real Returns	Mean by industry and year using S&P/ASX sectoral indices (n=10)
Industry Mean for ROE	Mean by industry and year using S&P/ASX sectoral indices (n=10)

7.4 Results

Exhibit 7.2 presents a correlation matrix of the all the hypothesised moderator variables posited in the theoretical specification of CEO cash reward and performance, along with their mean values and standard deviations. These results suggest that firm risk is significantly and negatively correlated with lagged and contemporaneous total cash and incentive cash at the 0.001 level. Also, these estimates suggest that lagged firm size is positively and significantly

correlated with lagged and contemporaneous CEO total and annual incentive cash reward at the 0.001 level.

Firm size appears to be a robust predictor of CEO total and annual incentive cash reward. Exhibit 7.3 presents the IV and system GMM estimates for the interaction between size and firm-level performance measures, on CEO cash rewards. The first two columns report the IV and system GMM estimates respectively for CEO total cash reward, while the third and fourth present the results for CEO annual incentive cash reward.

Hypothesis 7.1a predicted a significant positive lagged association between firm size and CEO total cash reward. Support for this prediction appears to be conditional on the estimation technique used. Consistent with the results reported in the previous chapter, size is a robust positive predictor of CEO total cash rewards, according to the system GMM estimates ($\beta=0.140, p< 0.001$), yet a non-significant predictor in the IV specification. The Davidson McKinnon specification test reported in Exhibit 7.3 confirms that a IV estimator provides comparatively more efficient estimates than an OLS fixed effects estimator ($F_{(9,2237)}=1.969, p<.05$). The null hypothesis for the Hansen J statistic is also supported, suggesting the system GMM is not over identified and is efficient in estimating the parameters of the model specified.

Hypothesis 7.1b predicted lagged firm Size to attenuate the relationship between some or all of the firm-level performance measures, and the level of CEO total cash reward. According to the results from the system GMM regression, firm size *positively* moderates the association between lagged ROE and the level of CEO total cash reward. In other words, the estimated interaction coefficient implies that as firm size increases, the association between accounting returns and CEO total cash reward increases. It is noteworthy however, that the main effects of lagged and contemporaneous ROE are negative on CEO total cash reward. The IV estimator yielded non-significant results, yet directionality of the interaction term was positive and thus inconsistent with prediction. On the basis of these results, Hypothesis 7.1b is rejected.

Exhibit 7.2 Pearson's Bivariate Correlation between all Modelled Variables

Variable	Mean	s.d	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 CEO Total Cash	13.14	0.87	1																	
2 CEO Total Cash t-1	13.13	0.86	0.890***	1																
3 CEO Annual Incentive Cash	11.78	1.25	0.790***	0.754***	1															
4 CEO Annual Incentive Cash t-1	11.77	1.25	0.733***	0.787***	0.902***	1														
5 Real Returns t-1	10.50	75.55	0.028	0.004	-0.007	-0.001	1													
6 Real Returns t	11.81	76.33	-0.007	-0.023	0.002	-0.019	0.027	1												
7 3Yr Returns t-1	51.26	174.53	0.0483**	0.043*	-0.002	0.007	0.415***	-0.100***	1											
8 3Yr Returns t	54.79	170.30	0.035*	0.008	0.009	0.000	0.519***	0.436***	0.653***	1										
9 ROE t-1	-8.73	82.61	0.119***	0.103***	0.040**	0.035*	0.149***	0.146***	0.057**	0.088***	1									
10 ROE t	-8.56	84.94	0.107***	0.108***	0.040**	0.031	0.084***	0.060***	-0.005	0.070***	0.030***	1								
11 Size t-1	18.41	2.26	0.646***	0.613***	0.402***	0.366***	0.022	-0.026	0.055**	0.007	0.276***	0.235***	1							
12 Firm Risk t	0.51	0.28	-0.372***	-0.358***	-0.215***	-0.195***	0.026	0.036*	0.076***	0.080***	-0.289***	-0.266***	-0.656***	1						
13 Top 1 Shareholdings (%)	22.98	17.28	-0.084***	-0.067***	-0.084***	-0.084***	-0.038*	-0.018	-0.067***	-0.046**	0.016	0.032	-0.033*	0.015	1					
14 Top 20 Shareholdings (%)	64.18	19.73	-0.079***	-0.068***	-0.068***	-0.068***	-0.022	-0.005	-0.089***	-0.046**	0.042*	0.038*	-0.027	0.010	0.680***	1				
15 CEO Stock Holdings (%)	9.23	15.63	-0.129***	-0.159***	-0.090***	-0.081***	-0.013	-0.005	0.037*	0.009	0.006	-0.004	-0.265***	0.094***	0.330***	0.315***	1			
16 CEO Option/rights Participation (0,1)	0.47	0.50	0.177***	0.107***	0.078***	0.070***	-0.022	-0.009	0.006	0.006	-0.016	-0.022	0.079***	0.078***	0.142***	0.115***	0.229***	1		
17 Incoming CEO t	0.16	0.36	-0.108***	-0.022	-0.044**	-0.031	-0.067***	-0.021	-0.036*	-0.046**	-0.071***	-0.043**	-0.084***	0.101***	0.021	0.018	0.034	0.136***	1	
18 Outgoing CEO t	0.14	0.35	-0.021	-0.024	-0.027	-0.018	-0.057***	0.077***	0.007	0.047**	-0.071***	-0.073***	-0.054***	0.086***	0.020	0.013	0.072***	0.012	0.002	1

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Exhibit 7.3. The Influence of Firm Size on CEO Cash Reward

	Total Cash Reward ^a		Annual Incentive Cash Reward ^a	
	IV	GMM	IV	GMM
Main Effects:				
Size ^a _{t-1}	0.036 (0.065)	0.140*** (0.017)	-0.117 (0.09)	0.063*** (0.018)
Interactions:				
Size _{t-1} * Real Returns _{t-1}	0.000 (0.000)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Size _{t-1} * ROE _{t-1}	-0.002 (0.002)	0.000** (0.000)	-0.001 (0.002)	0.000 (0.000)
Size _{t-1} *3Yr Returns _{t-1}	0.000 (0.000)	3.142 (0.437)	0.000 (0.000)	0.000 (0.000)
Market Return:				
Real Returns ^b _{t-1}	-0.003 (0.007)	-0.001 (0.001)	-0.009 (0.01)	-0.001 (0.004)
Real Returns ^b _t	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.002)	0.001 (0.000)
3Yr Returns ^b _{t-1}	0.005 (0.004)	-0.003 (0.001)	0.009 (0.005)	-0.001 (0.001)
3Yr Returns ^b _t	0.001 (0.001)	0.000 (0.000)	0.001 (0.002)	0.000 (0.000)
Accounting Return:				
ROE ^b _{t-1}	0.029 (0.029)	-0.003 (0.001)	0.017 (0.039)	-0.006 (0.004)
ROE ^b _t	0.001 (0.002)	-0.000 (0.000)	-0.001 (0.003)	-0.000 (0.000)
Controls:				
Firm Risk _t	0.096 (0.202)	0.226* (0.095)	-0.021 (0.264)	-0.047 (0.089)
CEO Total Cash Reward ^a _{t-1}	0.265*** (0.031)	0.558*** (0.047)		
CEO Annual Incentive Cash ^a _{t-1}			0.447*** (0.043)	0.807*** (0.058)
Incoming CEOs ^c	-0.222*** (0.058)	-0.213*** (0.024)	-0.052 (0.080)	-0.027 (0.028)
Outgoing CEOs ^c	0.061* (0.029)	0.078** (0.031)	-0.080* (0.041)	-0.057 (0.030)
Constant	8.980*** (1.227)	3.142*** (0.437)	8.648*** (1.551)	1.108* (0.498)
Observations	2775	2775	2774	2774
Year Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Davidson McKinnon Test of Exogeneity	F=1.969*		F=2.172*	
Hansen test of Overidentifying Restrictions		$\chi^2=255.73$		$\chi^2=185.30$
Arellano-Bond test for AR(2) in first differences		z=2.50**		z=2.30*

^aNatural Logarithm

^bPercentage

^cBinary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust standard errors in parenthesis

While the results suggest that size positively moderates the lagged relationship between accounting returns – measured by ROE - and CEO total cash reward, this effect did not persist for market-return performance measure; real returns. While estimated coefficients for the two market-return measures were consistent with the hypothesized directionality, they were non-significant.

Hypothesis 7.1c predicted a significant lagged negative association between firm size and the level of incentive reward. Once again, the estimated coefficients for size are inconsistent across IV and system GMM specifications. The former yields a negative, albeit, non-significant coefficient, and the latter a significant positive coefficient. Contrary to prediction, the system GMM estimated coefficient implies that CEOs in larger firms receive significantly more annual incentive reward. However, this of itself, does not mean that in larger firms, incentive cash payments are more performance-sensitive. The results across the two specifications presented in Exhibit 7.3 do not furnish support for Hypothesis 7.1d, which predicted firm size to negatively moderate the lagged association between CEO annual incentive cash rewards and the three firm-level performance measures.

Exhibit 7.4 reports the moderating effects of firm risk on the relationship between CEO total cash and annual incentive cash reward, and firm performance using the system GMM and IV estimators respectively. In terms of the main effects, Hypothesis 7.2a predicted a positive association between the level of CEO total cash rewards and firm risk. The IV and system GMM regressions yielded inconsistent estimates. Consistent with the prediction, the estimated effect of firm risk on the level of CEO total cash reward was significant and positive at the 0.05 level for system GMM, and non-significant and negative for the IV estimator. Results from the system GMM suggest that CEOs receive significantly higher levels of total cash reward as firm risk increases ($\beta=0.146, p < 0.05$).

Exhibit 7.4. The Influence of Firm Risk on CEO Cash Reward

	Total Cash Reward ^a		Incentive Cash Reward ^a	
	IV	GMM	IV	GMM
Main Effect:				
Firm Risk _t	0.007 (0.141)	0.146* (0.074)	-0.007 (0.224)	-0.022 (0.143)
Interaction effects:				
Firm Risk _t * Real Returns _{t-1}	-0.002 (0.004)	0.002 (0.002)	0.005 (0.007)	0.002 (0.003)
Firm Risk _t * ROE _{t-1}	0.021 (0.013)	0.004 (0.002)	0.021 (0.02)	0.001 (0.003)
Firm Risk _t *3YrReturns _{t-1}	0.002 (0.001)	-0.000 (0.001)	-0.002 (0.002)	0.000 (0.001)
Market Return:				
Real Returns ^b _{t-1}	0.001 (0.003)	-0.002 (0.001)	-0.005 (0.005)	-0.001 (0.002)
Real Returns ^b _t	0.000 (0.001)	0.000 (0.001)	0.000 (0.002)	0.001 (0.001)
3Yr Returns ^b _{t-1}	-0.001 (0.001)	0.000 (0.001)	0.003 (0.002)	0.000 (0.001)
3Yr Returns ^b _t	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Accounting Return:				
ROE ^b _{t-1}	-0.016 (0.011)	-0.003 (0.002)	-0.013 (0.018)	-0.002 (0.002)
ROE ^b _t	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.003)	0.000 (0.001)
Controls:				
Size ^a _{t-1}	0.051 (0.048)	0.100*** (0.023)	-0.135 (0.077)	0.075*** (0.032)
CEO Total Cash Reward ^a _{t-1}	0.311*** (0.026)	0.771*** (0.062)		
CEO Annual Incentive Cash ^a _{t-1}			0.460*** (0.031)	0.821*** (0.049)
Incoming CEOs ^c _t	-0.204*** (0.039)	-0.255* (0.026)	-0.036 (0.062)	-0.044 (0.034)
Outgoing CEOs ^c _t	0.073** (0.028)	0.058 (0.031)	-0.054 (0.046)	-0.040 (0.032)
Constant	8.215*** (0.819)	1.138* (0.583)	8.820*** (1.569)	0.729 (0.518)
Observations	2775	2275	2774	2274
Year Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Davidson McKinnon Test of Exogeneity	<i>F</i> =2.480**		<i>F</i> =3.089***	
Hansen test of Overidentifying Restrictions		$\chi^2=180.78$		$\chi^2=167.30$
Arellano-Bond test for AR(2) in first differences		<i>z</i> =2.70**		<i>z</i> =2.24*

^aNatural Logarithm

^bPercentage

^cBinary Variable

* *p* < 0.05

** *p* < 0.01

*** *p* < 0.001

Robust Standard Errors in parenthesis

While firm risk appears to be a significant positive predictor of the level of CEO total cash reward, the results in Exhibit 7.3 suggest that it does not significantly explain variation in the level of CEO annual incentive cash reward. Across both IV and system GMM specifications, the estimated coefficient for firm risk was negative and non-significant. On the basis of these findings, Hypothesis 7.2c is rejected.

7.5 Discussion

Overall, the main effects of firm size are consistent with the extant empirical literature, as well as with the estimates reported in the previous chapter, which excluded size/performance interaction terms in the econometric model. Size matters in terms of the board's determination of CEO cash reward levels across all cash reward components. The fact that firm size is a positive moderator of the relationship between accounting return and total CEO cash reward suggests that accounting measures are more important *foci* of board deliberations when determining CEO total cash reward compared to market-return measures in larger firms.

While firm risk is a significant positive predictor of the level of total CEO cash rewards, contrary to prediction, firm risk overall does not, significantly nor negatively, moderate the relationship between the level of CEO total cash rewards and lagged accounting and market performance. Therefore, risk does not appear to have a meaningful attenuation effects on the CEO–reward performance relationship, which is also inconsistent with past empirical findings. This finding is inconsistent with previous studies that have reported significant negative moderating effects of firm specific risk (Aggarwal and Samwick, 1999; Core *et al.*, 1999; Merhebi *et al.*, 2006). Nonetheless, the results in the current and foregoing chapters suggest that it is important to specify risk as direct determinant of CEO rewards.

Bebchuk and Fried (2002; 2004) mount the compelling argument that boards seek to legitimate CEO reward level and composition for self-serving reasons and also seek ways to report and disclose CEO rewards in a way that reduces the risk of shareholder outrage. Furthermore, high levels of fixed rewards may be legitimised on the basis of providing CEO greater retention incentives in high-risk firms. These considerations, in turn, attenuate the sensitivity of CEO cash reward to measures of firm-level performance, since fixed cash rewards are used to offset CEO risk exposure stemming from firm risk.

If CEOs are aware that size is an important focus of board deliberations pertaining to CEO cash reward and performance, it is thus reasonable to suppose that CEOs will be provided with strong incentives to increase firm size. This, in effect, is further supported by arguments that firm size may be considered by the board as being a proxy for organizational complexity, and thus CEO task performance complexity (see Finkelstein and Hambrick, 1988). The fact that size has a significant influence on CEO cash reward levels may also help explain the concurrent rise in CEO reward and the level of corporate merger and acquisition activity; this matter is not pursued further in this study.

Consistent with Agency Theory, the hypothesised model presented in Chapter Four, recognizes the role of the board to manage and balance CEO-agent risk-bearing with CEO-agent incentives. Furthermore, it is reasonable to expect, consistent with Proposition 1, that CEO cash reward total levels can be expected to be aligned to, albeit not exclusively, firm-level performance.

The foregoing results suggest that, contrary to prediction and the extant research, firm risk does not significantly moderate the association between performance and CEO annual incentive cash rewards, nor does it significantly predict the level of incentive cash¹⁹. The relationship between CEO reward and measures of accounting return, and market-return performance, does not appear to vary as a function of either firm size, or variance in stock returns. Furthermore, it appears from these findings that boards reward significantly higher levels of CEO total cash reward to offset the additional risk stemming from greater firm risk. This proposition is also consistent with extant theory and research suggesting firm risk precipitates a trade-off between incentive contracts and CEO-agent risk exposure. However, in contrast to prediction and extant empirical evidence, firm risk was not found to significantly moderate the relationship between CEO incentive cash and firm level performance. According to the estimated coefficients, firm risk did not militate against higher levels of annual incentive cash. As such, it appears that boards view firm size as an important

¹⁹ Specification tests presented at the bottom of Exhibit 7.4 have additional implications on these results. First, the Davidson Mackinnon test rejects the null that estimates from both IV and simple fixed effects estimates are consistent. This confirms that model parameters would be biased and inconsistent if estimated through a fixed effects OLS approach. Hansen J statistic indicates that the system GMM is not over-identified, and that the system GMM is an efficient and identified multi-equation approach to estimating model parameters. On the basis on these tests, the forthcoming chapters will only apply System GMM panel analysis to examine hypothesised relationships.

basis for determining CEO total cash reward levels and, more specifically, the fixed cash reward component.

It seems reasonable to suggest that boards use increments in fixed component of CEO total cash reward to offset additional CEO-agent risk-bearing stemming from high levels of firm risk. From a decision-making perspective, directors may regard CEO fixed rewards as being instrumental in redressing motivational loss associated with poor CEO expectancies to accomplish performance targets conditioned on volatile market-return performance. Becker's (2006) research provides evidence in support of this proposition by finding that wealthier CEOs are more likely to accept higher levels of incentive reward. It follows that if fixed reward increases as a proportion of total cash rewards, we should then find that risk, by implication, decouples the level of total cash from firm performance. Such a prediction is unsupported by our results.

Accordingly, these results suggest that, inconsistent with Agency Theory, reported incentive cash is not a legitimate source of CEO risk bearing, and thus presumably not an important condition for CEO performance evaluations and attributions. At the very least, high firm risk would presumably inform the board's selection of performance measures and/or its assessment of CEO performance. Consistent with Lambert and Larcker (1987), boards in such circumstances will place lower importance on stock-market performance, and greater weight on measures that reflect more reliably the CEO's actions and behaviours. However, according to our results, accounting-based measures do not provide additional or incremental explanatory power. Thus, it remains unclear whether boards assess firm risk as a criterion against which to judge the efficacy of proposals pertaining to CEO incentive contracts. It is also unclear which firm performance measures boards use to evaluate CEO performance.

7.6 Conclusion

Consistent with previous studies, the two-step system GMM results that are presented in this chapter indicate that firm size and risk are both significant predictors of CEO cash reward levels. It is reasonable to infer from the results that these firm-level factors are important *foci* in board decisions regarding CEO cash reward levels. As expected, the results indicate that size is a robust positive predictor of the level of CEO total cash reward, and the level of incentive cash rewards. Risk is also a significant positive predictor of the level of CEO total cash rewards, yet, against expectations, does not significantly explain variation in the level of

annual incentive cash rewards. We speculate that this might be because reported performance-based cash rewards are not considered to be legitimate source of CEO risk bearing in view of the results presented in Chapter Six showing that CEO incentive cash reward levels are insensitive to various measures of firm-level performance. This may also explain why the hypothesised moderating roles of both of these variables are unsupported. The inferential results presented in this chapter indicate the importance of operationalising these factors as controls in the empirical specification of CEO cash reward and performance. This is the approach taken in the following empirical chapters.

Chapter Eight

CEO Ownership as a Moderator of CEO Cash Reward and Performance

8.1 Introduction

Chapters Six and Seven, in tandem, examine the influence of firm characteristics on CEO cash reward. The previous chapter specifically examines the influence of firm size and firm risk on CEO cash reward. The results confirm that firm size and firm risk are important determinants of CEO cash reward.

According to the hypothesised model presented in Chapter Four, CEO equity ownership can also be an important locus of the board's management of CEO cash reward and performance. In an attempt to gain a better understanding of the relationship between CEO cash reward and equity components, this chapter specifically examines the moderating role of CEO share ownership and stock option and/or share holdings, on the relationship between CEO cash reward and performance.

First, this chapter briefly revisits the literature on CEO ownership in order to explicate the causal logic underpinning the predictions made. Second, using a system GMM approach to dynamic panel analysis, this chapter tests whether CEO share ownership, and participation in a stock option and/or share rights plan, moderate the relationship between CEO total cash reward and measures of firm-level performance.

8.2 CEO Equity Ownership: Theory, Evidence and Hypotheses

There are now myriad forms of equity-based executive LTIPs, our modelling recognises that CEOs can participate in two different types of equity ownership. The first is current ownership stemming from direct and indirect interests in the company's stock, the other is unrealised ownership and by default, capital gain, stemming from participating in long-term incentive plans where the denomination is company equity, such as stock options and share rights.

From an Agency Theory perspective, CEO share ownership has been predominantly theorised as a proxy for CEO risk bearing, and as an alternative incentive mechanism to CEO performance-cash reward to address moral hazard (Fama, 1980). As such, CEO ownership

from a board's perspective can diminish the importance of performance-based cash reward, given that ownership provides strong incentive to promote market return performance (see Tevlin, 1996, for empirical support). According to Hall and Liebman (1998), lowering the 'sharing rate' (i.e. the incremental relationship between CEO reward and shareholder gains) may provide a stronger incentive effect because a high sharing rate transfers undue compensation risk to CEO-agents to the point that they may avoid high net present value projects (see also Conyon and Sadler, 2001). It is important for boards to balance CEO performance incentives and CEO risk bearing (Jensen and Meckling, 1976). These considerations have direct implications for the extent to which boards align CEO cash reward to performance. Boards who consider CEO ownership to be an index of CEO risk bearing can be expected to reduce the sensitivity of CEO cash reward to performance (see Tevlin, 1996).

However, Becker (2006) provides evidence to the contrary. Rather than CEO ownership being an additional source of risk, it is also a signifier of CEO wealth and, hence, may serve to lessen CEO aversion to at-risk cash rewards. Accordingly Becker (2006) found that the CEO's current wealth position can also moderate the *ex ante* sensitivity of cash reward to performance, such that wealthier CEOs are more likely to accept higher exposure to incentive reward.

Two other Agency Theory postulates are worth noting in relation to the posited effects of CEO ownership on the board decision-making processes underpinning CEO cash reward. Firstly, it is suggested that CEO ownership can influence the board's selection of performance criteria used to determine CEO cash reward. For example, CEO share ownership, by default, provides the CEO with incentives to promote market return, and may moderate the board's use of alternative performance measures (Lambert and Larcker, 1988). Second, implicit in Lambert and Larcker's (1987) arguments, CEO ownership can moderate the relationship between CEO cash reward and performance, albeit more indirectly, by precipitating a trade-off between accounting and market return measures. Lambert and Larcker (1987) suggest that boards place differential weight on accounting and market return performance measures in the management of CEO performance-based CEO cash reward on the basis of CEO share ownership. CEO share ownership, consistent with Agency Theory tenets, is assumed to provide strong incentives to improve market-performance so that the CEO can maximise their capital gains. Finally, Lambert and Larcker (1987) maintain boards - when establishing the

performance conditions for CEO cash reward - will specify non-market measures in situations where the incumbent CEO has large shareholdings.

Sanders (2001) suggests that CEO ownership, on the one hand, and CEO stock option and/or share rights participation, on the other, may have different implications for CEO risk and effort preferences. Different types of CEO equity participation can have differential incentive and risk effects on the CEO (Bryan et al., 2000; Sanders, 2001). For these reasons, it would appear to be appropriate to distinguish between asymmetric and symmetric risk proxied by option or share rights plan participation, and equity ownership, respectively. On this basis, it is reasonable to suppose that boards, in their deliberations pertaining to CEO cash reward and performance, attach different degrees of importance to each form of ownership. It is therefore reasonable to test empirically the following propositions:

Proposition 5a: The percentage of issued capital held by the CEO is associated with CEO total cash and annual incentive cash reward.

Proposition 5b: CEO participation in a stock option and/or share rights plan is associated with CEO total cash and annual incentive cash reward.

Finally, the Managerial Power perspective also considers CEO share ownership to influence CEO cash reward decisions. According to exponents of this perspective, CEOs with large stock holdings may be able to extract greater economic rents camouflaged as reward for performance (Bebchuk and Fried, 2004). The posited causal mechanisms implicit in this exposition of the process through which ownership influences CEO cash reward, are different from the causal logic underpinning the Agency Theory perspective. For our purposes however, it is important to recognise that both perspectives predict ownership to play a moderating role in the relationship between CEO cash reward and performance. Both Agency Theory and the Managerial Power perspective predict, more broadly, that CEO share ownership, in some way or another, attenuates the relationship between CEO cash reward and measures of firm-level performance. We would expect to find, on the basis of their theoretical premises, CEO ownership to influence CEO cash reward levels as well as negatively moderate the relationship CEO cash reward and performance. These propositions are both tested on CEO total cash reward and annual incentive cash reward. In addition, and consistent with Sanders (2001) propositions that Board's may appraise different types of CEO

ownership differentially, we test the moderating role of both CEO share ownership, and CEO stock option and/or share rights participation, separately.²⁰ Following on from this logic, the following hypotheses are advanced:

H8.1a: There is a significant negative association between the percentage of issued capital owned by the CEO and the level of CEO total cash reward.

H8.1b: There is a significant negative association between the percentage of issued capital owned by the CEO, and the level of CEO annual incentive cash reward.

H8.1c: The percentage of issued capital owned by the CEO significantly and negatively moderates the relationship between CEO total cash reward and measures of firm-level performance in such a way that the relationship is weaker when ownership is high than when it is low.

H8.1d: The percentage of issued capital owned by the CEO significantly and negatively moderates the relationship between the level of CEO annual incentive cash reward and measures of firm-level performance in such a way that the relationship is weaker when ownership is high than when it is low.

H8.2a: CEOs with option and/or share rights holdings earn significantly different levels of CEO total cash, than those CEOs who do not have option holdings.

H8.2b: CEOs with option and/or share rights holdings earn significantly lower levels of annual incentive cash reward.

H8.2c: CEO participation in an option and/or share rights plan significantly and negatively moderates the relationship between CEO total cash reward and measures of firm-level performance in such a way that the relationship is weaker when participation is high than when it is low.

²⁰ Also, to account for the possibility of ownership moderating the board's choice of performance measures, which in turn moderate the relationship between CEO cash reward and performance, an accounting return measure will be used alongside a market-return measure.

H8.2d: CEO participation in an option and/or share rights plan significantly and negatively moderates the relationship between the level of CEO annual incentive cash reward and measures of firm-level performance in such a way that the relationship is weaker when participation is high than when it is low

8.3 The Econometric Model and Estimator

The dynamic panel model testing hypotheses relating to the moderating role of CEO equity ownership as on the relationship between CEO cash reward and performance, is encapsulated in the following level equation:

$$\begin{aligned}
 CEOTotalCash_{i,t} = & \alpha + \beta_0 CEOTotalCash_{i,t-1} + \beta_1 Size_{i,t-1} + \beta_2 FirmRisk_{i,t} + \\
 & \beta_3 AccountingReturns_{i,t-1} + \beta_4 MarketReturn_{i,t-1} + \beta_5 CEOOwnership_{i,t-1} + \\
 & \beta_6 CEOOwnership_{i,t-1} * AccountingReturns_{i,t-1} + \beta_7 CEOOwnership_{i,t-1} \\
 & * MarketReturn_{i,t-1} + \lambda_2 Turnover_{i,t} + \mu_i + \varepsilon_{i,t}
 \end{aligned}$$

Where *Size* is indexed by the natural logarithm of total assets, and *FirmRisk*, indexed by the cumulative distribution function of firm returns of 36 months prior (see Aggarwal and Samwick, 1999 for methodology); *AccountingReturn* is measured by real ROE.

- *MarketReturn* is measured as real annual real stock returns.
- *CEOOwnership* is the vector for the two variants of CEO ownership, including a one year lag in the percentage of ordinary stock held by the CEO, and a binary variable equal to 1 if the CEO in year t-1 participated in an option and/or share rights plan. These two variables were then interacted separately with each firm-level performance measures.
- The model specifies interaction terms to test the key hypotheses. However, both size and risk remain as controls for equity ownership and ownership concentration estimates on the basis of their robust effects delineated in the previous chapter, as well as their theoretical importance.
- The model also controls for unobserved firm-effects through firm dummies, and time effects through year dummies.
- *Turnover* is the vector for incoming and outgoing CEO dummy variables to control for abnormalities associated with sign-on payments, termination payments, and salary payments covering only part of the report year.

All variables and hypothesized moderators and their respective measures are presented in exhibit 8.1

Exhibit 8.1. Variables and Measures

Variables	Measures
Dependent Variables:	
CEO Total Cash Reward	Natural Logarithm of the summation of reported incentive and non-incentive cash components
CEO Annual Cash Reward	Natural Logarithm of Reported annual incentive cash
Market Return Variables:	
Real Returns	(price at t + Dividend less Price at t-1)/price at t-1))
ROE	ROE=NPAT before abnormal/(shareholder equity-outside equity interests)
Moderators:	
Size	Total Assets
Firm Risk	Aggarwal and Samwick's (1999a) Cumulative Distribution Function of firm real returns. The measure is between 1 and 0 with 1 as the maximum level of volatility.
CEO Share Ownership	Percentage of outstanding ordinary shares held by the CEO in t-1. This measure aggregates both direct and indirect CEO ordinary shareholdings.
CEO option and/or share rights plan participation	1= CEO had option and/or share rights in t-1, and 0= otherwise
Turnover Variables:	
Incoming CEOs _t	1 = first year in the position as CEO and 0 if otherwise
Outgoing CEOs _t	1= Last year in the position as CEO and 0 if otherwise

The current chapter and forthcoming chapters use a system GMM approach to parameter estimation to examine the relationships between CEO share ownership and stock option/share rights participation, CEO total cash and annual incentive cash reward, and firm-level performance. Again, as discussed in Chapter Five, this estimator is used to address the complex error structure of dynamic panel data models, and is more efficient than IV and FE estimators in orthogonalising the x-vector (see Blundell and Bond, 1998).

8.4 Results

Exhibit 8.2 reports the system GMM estimated coefficients for CEO total cash reward, and annual incentive cash reward. Specification test results for the two regressions are also presented. The first test, the Hansen J test for over-identifying restrictions is non-significant.

The second test, the Arellano-Bond test for second-order autoregression²¹ is also non-significant. Both these non-significant results indicate that the regressions tested satisfy the requirement for having valid instruments and no second order serial correlation in the first differences.

Exhibit 8.2. The Influence of CEO Share Ownership on CEO Cash Reward

	Total Cash Reward ^a	Total Incentive Cash Reward ^a
CEO Share Ownership ^c _{t-1}	-0.002 (0.001)	-0.005 (0.004)
CEO Share Ownership _{t-1} * Real Returns _{t-1}	0.000 (0.001)	0.000 (0.001)
CEO Share Ownership _{t-1} * ROE _{t-1}	0.000 (0.001)	0.000 (0.001)
Market Return:		
RealReturns ^b _{t-1}	0.000 (0.001)	0.000 (0.001)
RealReturns ^b _t	0.000 (0.001)	-0.001 (0.001)
Accounting Return:		
ROE ^b _{t-1}	0.000 (0.001)	0.000 (0.001)
ROE ^b _t	0.000 (0.001)	-0.001 (0.001)
Controls:		
Firm Risk _t	-0.018 (0.111)	0.057 (0.229)
Size ^a _{t-1}	0.065*** (0.019)	0.068 (0.042)
CEO Total Cash reward ^a _{t-1}	0.794 (0.043)	
CEO Annual Incentive Cash ^a _{t-1}		0.818*** (0.060)
Incoming CEOs ^c _t	-0.204*** (0.042)	-0.110*** (0.042)
Outgoing CEOs ^c _t	0.085* (0.043)	-0.107* (0.044)
Constant	1.550** (0.507)	0.905 (0.831)
Observations	2021	2021
Year Dummies	yes	yes
Fixed Effects	yes	yes
Hansen test of Overidentifying Restrictions	$\chi^2=201.73$	$\chi^2=57.97$
Arellano-Bond test for AR(2) in first differences	z=1.26	z=1.91

²¹ See Roodman (2007) for an explication of these specification tests.

^a*Natural Logarithm*

^b*Percentage*

^c*Binary Variable*

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors are reported in parentheses

According to the estimated coefficients, based on a system GMM estimation, the main lagged effect of the proportion of shares held by the CEO is non-significant on both the level of CEO total cash reward, as well as the level of CEO annual incentive cash reward (contrary to Hypothesis 8.1a and 8.1b). The results also indicate that CEO share ownership as a proportion of total shares outstanding, contrary to Hypothesis 8.1c, does not significantly and negatively moderate the relationship between CEO total cash reward and measures of accounting and market return performance. Also inconsistent with prediction, CEO share ownership does not significantly and negatively moderate the relationship between CEO annual incentive cash reward, and both measures of firm-level performance (Hypothesis 8.1d). These results suggest that CEO share ownership does not significantly strengthen or weaken the relationship between CEO cash reward and measures of firm-level performance.

Exhibit 8.3 reports the estimated coefficients for CEO stock option and/or share rights plan participation, CEO total cash and annual incentive cash reward, and measures of firm-level performance. Specification test results for the two regressions are also presented. The first test, the Hansen J test for over-identifying restrictions was non-significant. The second test, the Arellano-Bond test for second-order autoregression²², was also non-significant. Both these non-significant results indicate that the regressions tested satisfy the requirement for having valid instruments, and no second order serial correlation in the first differences.

According to the estimated coefficients, and based on a system GMM estimation, the main lagged effect of CEO participation in a stock option and/or share rights plan is non-significant on both the level of CEO total cash reward and the level of CEO annual incentive cash reward (contrary to Hypothesis 8.2a and 8.2b). The results also indicate that, contrary to Hypothesis 8.2c, CEO share ownership as a proportion of total shares outstanding does not significantly negatively moderate the relationship between CEO total cash reward and measures of accounting (ROE) and market return performance (real returns). Also inconsistent with

²² See Roodman (2007) for an explication of these specification tests.

prediction (Hypothesis 8.2d), CEO share ownership does not significantly negatively moderate the relationship between CEO annual incentive cash reward and both measures of firm-level performance. These results suggest that CEO share ownership does not significantly strengthen or weaken the relationship between CEO total cash reward and performance. All of the hypotheses are rejected on the basis of these results.

Exhibit 8.3. The Influence of CEO Stock Option and/or Share Rights Plan Participation on CEO Cash Reward

	Total Cash Reward ^a	Annual Incentive Cash Reward ^a
CEO Option/Share Rights ^c _{t-1}	0.326 (0.399)	0.002 (0.359)
CEO Option/Share Rights _{t-1} *Real Returns _{t-1}	-0.002 (0.004)	0.007 (0.007)
CEO Option/Share Rights _{t-1} * ROE _{t-1}	-0.002 (0.004)	-0.002 (0.005)
Market Return:		
Real Returns ^b _{t-1}	0.002 (0.003)	-0.002 (0.004)
Real Returns ^b _t	0.001 (0.001)	0.000 (0.002)
Accounting Return:		
ROE ^b _{t-1}	-0.002 (0.003)	0.002 (0.005)
ROE ^b _t	0.000 (0.001)	-0.003 (0.002)
Controls:		
Firm Risk _t	-0.596 (0.545)	-0.524 (0.652)
Size ^a _{t-1}	-0.073 (0.107)	-0.022 (0.120)
CEO Total Cash Reward ^a _{t-1}	1.023*** (0.196)	
CEO Annual Incentive Cash Reward ^a _{t-1}		0.958*** (0.187)
Incoming CEOs ^c _t	-0.166 (0.090)	-0.004 (0.120)
Outgoing CEOs ^c _t	0.076 (0.046)	-0.070 (0.061)
Constant	1.184 (1.398)	1.084 (1.782)
Observations	2855	2855
Year Dummies	yes	yes
Fixed Effects	yes	yes
Hansen test of Overidentifying Restrictions	$\chi^2=10.17$	$\chi^2=11.43$
Arellano-Bond test for AR(2) in first differences	$z=1.92$	$z=1.81$

^aNatural Logarithm

^bPercentage

^cBinary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors are reported in parentheses

8.5 Discussion

On the basis of the above results, it appears that CEO share ownership and participation in a stock option and share rights plans does not play an important moderating role in explaining the relationship between CEO cash reward and measures of firm-level performance. These results have some important implications for theory and previous research.

First, the results do not support two pivotal propositions advanced from an Agency Theoretic perspective, as to the effects of CEO ownership on CEO cash reward. Earlier it is mentioned that Agency Theory regards CEO ownership as an indicator of CEO risk bearing, as well as a substitute to executive incentive contracts (see Lambert and Larcker, 1987). It is also maintained that this supposition prompts tradeoffs between CEO ownership and incentive or performance-based CEO cash reward in an attempt to manage CEO risk bearing.

Even further, CEO ownership is posited to influence the board's selection of CEO performance measures, and the relative weight placed on accounting and market return measures (Lambert and Larcker, 1987). If CEO ownership affects board decisions about CEO cash reward in ways purported by Agency Theory, we would expect CEO ownership or CEO participation in a stock option and/or share rights plan to significantly influence levels of CEO cash reward, as well as to negatively moderate the relationship between CEO cash reward and firm-level performance measures. These findings do not lend support to Lambert and Larcker's (1987) suggestion that the sensitivity of CEO cash reward to non-market performance measures is a negative function of CEO ownership. The foregoing propositions are unsupported since the interaction terms and main effects of CEO ownership, and CEO participation in a stock option and/or share rights plan is non-significant.

The results do not support Becker's (2006) findings and suppositions suggesting that the board may regard CEO ownership as signifier for wealth, and as such that the more stock or options a CEO has, the more willing they will be to accept additional at-risk cash reward. Following this logic we would expect to find i) CEO ownership to positively influence the level of annual incentive cash reward, and ii) CEO ownership to positively moderate the

relationship between CEO cash reward and performance. These predictions are uncorroborated by results presented in this chapter.

Similarly, the Managerial Power perspective predicts that CEO ownership may negatively moderate the relationship between CEO cash reward and performance. This prediction is predicated on a different set of causal assumptions. This perspective construes CEO ownership as an index of board capture, and as such, that CEOs with larger share holdings may be able to extract greater economic rents. Again, the prediction is unsupported by our Australian evidence.

It appears in the Australian context, CEO ownership or CEO participation in a stock option and share rights plan are not regarded as important bases upon which boards make decisions about CEO cash reward. Indeed, the extant literature and research provide suggestive support for the notion that boards factor CEO ownership into their deliberations regarding the performance-sensitivity of CEO cash reward. The results presented suggest otherwise. They question the way in which Australian boards construe CEO ownership. If they did construe CEO ownership in ways suggested by Agency Theory or the Managerial power approach – as indices for agent risk bearing or managerial power- we would find CEO ownership measures to significantly influence the performance-sensitivity of CEO cash reward, and the level of CEO cash reward at the very least. These results suggest that perhaps the Australian boards do not regard CEO cash reward as not a legitimate source of CEO risk bearing, or as a source of managerial power. This supposition is also plausible in light of the findings presented in Chapter Six.

8.6 Conclusion

This chapter set out to examine two forms of CEO ownership - share ownership and participation in stock option and/or share rights plans - and to hypothesise how their main effects and interactions affect board decisions to align CEO cash reward with measures of firm-level performance.

Drawing from insights afforded by the extant empirical and theoretical literature on CEO reward and performance, CEO ownership is cast as an important focus of board deliberations in the determination of CEO cash reward. The results presented in the chapter show that participation in a stock option/share rights plan and CEO share ownership, do not have any

significant main or moderating impact on the level of CEO total cash reward and annual incentive cash reward.

Thus, this chapter shows that CEO ownership and equity participation do not buttress the relationship between CEO cash rewards and measures of firm level performance. These results may be explained in term of the board's perception of the risks attendant to cash incentives, such that boards are disinclined to seek to trade-off risk stemming from CEO equity ownership, and risk stemming from CEO cash reward processes.

The next chapter examines the influence of a different dimension of equity ownership – namely ownership dispersion and concentration amongst external owners. Specifically, it considers the process through which external ownership concentration can influence levels of CEO cash reward, in addition to influencing the *ex post* sensitivity of reported cash reward to measures of firm level performance.

Chapter Nine

External Ownership Concentration as a Moderator of CEO Cash Reward and Performance

9.1 Introduction

The purpose of this chapter is to examine the influence of external ownership concentration on CEO cash reward. This chapter first revisits the literature examining the effects of ownership concentration on CEO reward. On the basis of this discussion, this chapter then explores, through system GMM panel data analysis, the main and moderating effects of external ownership concentration on the relationship between CEO cash reward and performance. The results are then presented and discussed.

9.2 External Ownership Concentration: Theory, Evidence and Hypotheses

Agency Theory is predicated on the assumption of ownership dispersion. For this reason it is less concerned with the effects of ownership concentration on CEO reward and performance, or board decisional processes and governance more generally.

There is a body of literature suggesting that external ownership concentration plays an important moderating role in the board's management of CEO cash reward and performance, and an important boundary condition for CEO reward-performance sensitivity. However this literature is somewhat disparate in terms of the directionality of the moderating effect of external ownership concentration on the relationship between CEO cash reward and performance.

Research undertaken by Tevlin (1996) finds that ownership concentration negatively moderated the relationship between CEO cash reward and measures of firm-level performance. Tevlin (1996) explained these findings in terms of ownership concentration reducing the need for executive incentive contracts that are intended to redress CEO opportunism.

Some authors focus more on the effects of ownership concentration on the board governance of CEO reward and performance by suggesting that external ownership concentration improves board governance. Ownership concentration is said to enhance the board's

incentives to engage in diligent monitoring, in addition to enforcing more performance contingent reward. To support these suppositions, Hartzell and Starcks (2003) report that external ownership concentration has positive moderating effects on the CEO reward-performance relationship (see Finkelstein and Hambrick, 1988 for an earlier example). This is because as external ownership increases, the board may perceive that there are greater risks to external scrutiny in terms of their management of CEO cash reward and performance. Consequently, boards have increased incentives to provide CEOs with higher levels of reward risk, and also to control the growth and level in CEO of total reward. Framed as a risk management issue, the board may seek to manage the potential for outrage from these stakeholders by increasing the firm-level performance-contingency of CEO cash rewards (Finkelstein and Hambrick, 1988). According to both Agency Theory and the Managerial Power thesis, shareholders regard CEO pay for performance favourably, and as such it is important for the board to align CEO cash reward with measures of firm-level performance. Therefore, it is reasonable to propose the following:

Proposition 6a: The percentage of issued capital held by top shareholders is negatively associated with CEO total cash reward.

Proposition 6b: The percentage of issued capital held by top shareholders is positively associated with CEO annual incentive cash reward.

While the Managerial Power Thesis considers ownership concentration to be an important consideration for the board, the exposition of camouflage has different implications for the management of the relationship between CEO reward and performance. Bebchuk and Fried's (2004) concept of camouflage highlights this point. According to these authors, boards actively avoid shareholder outrage by configuring CEO reward in ways perceived favourably by external shareholders. According this perspective, ownership concentration does not necessarily precipitate CEO reward for performance, but rather precipitate actions that obfuscate CEO reward without performance. Following on from this logic, this chapters empirically tests the following:

H9.1a: There is a significant negative association between lagged ownership concentration and the level of CEO total cash reward.

H9.1b: Ownership concentration positively and significantly moderates the relationship between firm-level performance measures and CEO total cash reward in such a way that the relationship is stronger when concentration is high than when it is low.

H9.1c: There is a significant positive association between the level of CEO annual cash incentive reward and lagged ownership concentration.

H9.1d: Ownership concentration positively and significantly moderates the relationship between firm-level performance measures and CEO annual cash incentive reward in such a way that the relationship is stronger when concentration is high than when it is low.

In so doing, we will also test, albeit indirectly, Tevlin's supposition that ownership concentration serves as a more cost effective substitute for CEO executive incentive contracts, such that ownership concentration negatively moderates the relationship between CEO cash reward and measures of firm-level performance.

9.3 The Econometric Model

Measures of external ownership concentration were interacted with the firm-level performance measures in order to examine whether external ownership concentration positively moderates the relationship between CEO cash rewards and firm-level performance. The dynamic panel model estimated in the current chapter is described in the following level equation:

$$\begin{aligned}
 CEOTotalCash_{i,t} = & \alpha + \beta_0 CEOTotalCash_{i,t-1} + \beta_1 Size_{i,t-1} + \beta_2 FirmRisk_t + \\
 & \beta_3 AccountingReturns_{i,t-1} + \beta_4 MarketReturn_{i,t-1} + \beta_5 \\
 & OwnershipConcentration_{i,t-1} + \beta_6 OwnershipConcentration_{i,t-1} * \\
 & AccountingReturns_{i,t-1} + \beta_7 OwnershipConcentration_{i,t-1} * MarketReturn_{i,t-1} + \\
 & \lambda_2 Turnover_{i,t} + \mu_i + \varepsilon_{i,t}
 \end{aligned}$$

Where:

- *Size* is indexed by the natural logarithm of total assets in year t-1.
- *FirmRisk*, indexed by the cumulative distribution function of firm returns of 36 months prior (see Aggarwal and Samwick, 1999 for methodology).
- *AccountingReturn* is measured by real ROE.
- *MarketReturn* is measured as annual real stock returns.

- *OwnershipConcentration* is the vector for two measures of ownership concentration that are modelled alternatively. These measures include the percentage of ordinary stock owned by the top shareholder, and the top 20 shareholders in year t-1.
- *Turnover* is the vector for incoming and outgoing CEO dummy variables to control for abnormalities associated with sign-on payments; termination payments, and salary payments covering only part of the report year.

All variables and hypothesized moderators and their respective measures are presented in Exhibit 9.1

Exhibit 9.1. Variables and Measures

Variables	Measures
Dependent Variables:	
CEO Total Cash Reward	Natural Logarithm of the summation of reported incentive and non-incentive cash components
CEO Annual Cash Reward	Natural Logarithm of Reported annual incentive cash
Market Return Variables:	
Real Returns	(price at t + Dividend less Price at t-1)/price at t-1))
ROE	ROE=NPAT before abnormal/(shareholder equity- outside equity interests)
Moderators:	
Ownership Concentration	Two measures were used, the first is the percentage of stock held by the top shareholder in t-1, the second is the proportion of stock held by the top 20 shareholders in t-1. The rationale for these measures was explained earlier.
Turnover Variables:	
Incoming CEOs	1 = first year in the position as CEO and 0 if otherwise
Outgoing CEOs	1= Last year in the position as CEO and 0 if otherwise

9.4 Results

These bivariate correlation coefficients for hypothesised moderators presented in Exhibit 7.1 (Chapter Seven) indicate that the concentration of common company stock holdings among the top 1 and top 20 shareholders are significant negative correlates of CEO total cash reward levels in year t and year t-1, and also with CEO annual incentive cash reward levels in year t and year t-1.

Exhibit 9.2 presents system GMM results for the interaction between ownership concentration, indexed by the concentration of common stock holdings by the top shareholder

(ownership Top1), and performance on the two cash reward measures. Specification tests indicate that the instruments used are valid, and that the system of equations has not been over-identified.

Contrary to prediction, the estimated coefficients suggest that ownership concentration - indexed by the percentage of stock owned by the largest shareholder²³ - does not significantly influence the level of CEO total cash reward, nor the level of annual incentive cash reward (Hypotheses 9.1a and 9.1c). Turning to the interaction terms, the estimated coefficient for the lagged interaction between the lagged percentage of total shares outstanding held by the top shareholder (ownership top1), and lagged real returns is positive and statistically significant at the 0.05 level. The estimated coefficient implies that as the percentage of stock held by the largest shareholder increases, the relationship between CEO total cash reward and annual real returns strengthens. However, the estimated coefficient for the lagged interaction between ownership concentration and the accounting-return performance measure, ROE, is non-significant. On the basis of these results, the prediction that ownership concentration positively moderates the relationship between CEO total cash reward and performance (Hypothesis 9.1b) is supported, albeit conditional on the firm-level performance measure used. The effects of the interaction terms on the level of CEO annual incentive cash reward are non-significant and do not support Hypothesis 9.1d.

²³ Initial analyses excluded CEOs who were identified as CEO-founders. Estimated coefficients remained substantively unchanged when CEO-founders were included in the sample.

Exhibit 9.2. The Influence of Top Shareholder Ownership Concentration on CEO Cash Reward

	Total Cash Reward^a	Annual Incentive Cash Reward^a
Ownership Top1 ^b _{t-1}	-0.003 (0.005)	-0.033 (0.026)
Ownership Top1 _{t-1} *Real Returns _{t-1}	0.0001* (0.000)	0.000 (0.000)
Ownership Top1 _{t-1} * ROE _{t-1}	0.000 (0.000)	0.000 (0.000)
Market Return:		
Real Returns ^b _{t-1}	-0.001 (0.001)	0.007 (0.004)
Real Returns ^b _t	-0.001 (0.001)	-0.002 (0.001)
Accounting Return:		
ROE ^b _{t-1}	0.000 (0.001)	-0.001 (0.005)
ROE ^b _t	-0.001 (0.001)	0.000 (0.002)
Controls:		
Firm Risk _t	0.454** (0.144)	-0.225 (1.434)
Size ^a _{t-1}	0.153*** (0.046)	0.058 (0.288)
CEO Total Cash Reward ^a _{t-1}	0.627*** (0.117)	
CEO Annual Incentive Cash Reward ^a _{t-1}		0.609*** (0.418)
Incoming CEOs ^c _t	-0.228*** (0.027)	0.032 (0.057)
Outgoing CEOs ^c _t	0.065 (0.034)	-0.051 (0.062)
Constant	0.065 (0.034)	4.338 (2.905)
Observations	2828	2828
Year Dummies	Yes	Yes
Fixed Effects	Yes	Yes
Hansen test of Overidentifying Restrictions	$\chi^2=65.30$	$\chi^2=7.85$
Arellano-Bond test for AR(2) in first differences	z=1.71	z=1.88

^aNatural Logarithm

^bPercentage

^cBinary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors are reported in parentheses

Exhibit 9.3. The Influence of Ownership Concentration Among Top-20 Shareholders on CEO Cash Reward

	Total Cash Reward ^a	Annual Incentive Cash Reward ^a
Ownership Top20 ^b _{t-1}	-0.017** (0.007)	0.013 (0.012)
OwnershipTop20 _{t-1} * Real Returns _{t-1}	0.000 (0.001)	0.000 (0.001)
Ownership Top20 _{t-1} * ROE _{t-1}	0.000 (0.001)	0.000 (0.001)
Market Return:		
Real Returns ^b _{t-1}	-0.004 (0.005)	0.008 (0.007)
Real Returns ^b _t	0.000 (0.001)	0.002 (0.001)
Accounting Return:		
ROE ^b _{t-1}	0.006 (0.007)	-0.002 (0.003)
ROE ^b _t	-0.003* (0.001)	-0.002 (0.002)
Controls:		
Firm Risk _t	0.049 (0.282)	-0.150 (0.898)
Size ^a _{t-1}	0.125* (0.057)	0.111 (0.109)
CEO Total Cash Reward ^a _{t-1}	0.687*** (0.120)	
CEO Annual Incentive Cash ^a _{t-1}		0.693*** (0.160)
Incoming CEOs ^c _t	-0.190*** (0.041)	-0.069 (0.050)
Outgoing CEOs ^c _t	0.07** (0.032)	-0.053 (0.047)
Constant	2.889* (1.349)	0.746 (2.364)
Observations	2828	2828
Year Dummies	yes	yes
Fixed Effects	yes	yes
Hansen test of Overidentifying Restrictions	$\chi^2=9.84$	$\chi^2=8.22$
Arellano-Bond test for AR(2) in first differences	$z=1.87$	$z=1.89$

^aNatural Logarithm

^bPercentage

^cBinary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors are reported in parentheses

The percentage of common stock held among the top 20 shareholders (ownership Top20) was used as an auxiliary measure of ownership concentration. Exhibit 9.3 presents the results for the interaction between ownership concentration, indexed by the concentration of common stock holdings by the top 20 shareholders, and performance on the two cash reward measures. According to the results for CEO total cash reward the concentration of shareholdings among the top 20 shareholders, consistent with Hypothesis 9.1a, has a significant negative effect on the level of CEO total cash reward. The estimated coefficient implies that as the percentage of shareholdings among the top 20 shareholders increases, the level of CEO total cash reward decreases. The results do not support the prediction that ownership concentration positively moderates the relationship between CEO annual incentive cash reward and measures of firm level performance, nor does it exert a significant negative main effect.

9.5 Discussion

This chapter set out to test the main and moderating effects of external ownership concentration, on the relationship between CEO cash reward, and measures of firm-level performance in the Australian context.

Contrary to Tevlin's (1996) research, this chapter furnishes support for the prediction that ownership concentration positively moderates the relationship between CEO total cash reward and firm market-return performance. The results suggest more specifically, that as the percentage of shares held by the largest shareholder increases, the relationship between CEO total cash reward and annual market return performance significantly strengthens. In other words, these results suggest that ownership concentration, indexed by the percentage stock owned by the top shareholder, leads to a closer alignment of CEO cash reward to measures of firm-level performance. These results are consistent with Hartzell and Starck's (2003) findings.

Also, the results indicate that as the percentage of shares held by the largest top 20 shareholders increases, the level of CEO total cash reward, on average, declines. Both these significant findings do not fashion support for the Managerial Power proposition that ownership concentration makes little difference to the sensitivity of CEO cash reward and performance. In contrast to predictions, both measures of ownership concentration did not significantly moderate or influence the level of CEO annual incentive cash reward.

These results have some important implications for developing our understanding of determinants of CEO cash reward. First, it can be inferred from these results that ownership concentration may influence the board's selection of criteria against which to evaluate CEO performance for the purpose of determining CEO cash reward. Here Lambert and Larcker's (1987) suggestion that ownership concentration influences the relative weight the board places on accounting and market return performance is particularly important. While this study does not directly test this supposition, the results do lend credence to the notion that ownership concentration is an important boundary condition for the relationship between market-return performance and CEO cash reward. The results indicate that ownership concentration does not moderate the relationship between CEO total cash reward, and measures of accounting-return performance. These results suggest that boards, in the context of large shareholders, are more likely to selectively attend to market-return performance in the determination of CEO cash reward.

The negative impact of ownership concentration on CEO total cash reward, also lends credence to the supposition that boards may be less inclined to ratify proposals pertaining to fixed cash increments as ownership concentration increases can be explained from a board risk management perspective. Therefore it is reasonable to suggest that boards may be more inclined to link CEO cash reward to market-return performance in the presence of a large block holder or institutional investor.

It is plausible to suggest that concepts such as social facilitation may play some role in explaining these findings. Haslam (2007) discusses this concept in terms of general employee performance management, and suggests that the mere perceived presence of others can enhance employee performance. It can be suggested that having a significant block holder places more pressure on the board to control levels of executive reward, because the anticipated disapproval is perceived to be greater (consistent with Finkelstein and Hambrick, 1988). This also accords with the Agency Theory postulate that monitoring (in this case by large block holders or institutional investors) can be used as an alternative means of minimising self-serving behaviours.

Finally, since little is known about how governance practices interact with ownership concentration/dispersal in determining CEO reward level, structure and outcomes, we have used auxiliary analyses to explore these possible associations more closely. Logistic

regressions (not reported in this thesis) revealed that boards are more likely to adopt ‘best’ governance practices in the presence of a large external block holder. The results showed that the effects of having a non-executive chairperson on CEO cash reward levels are positively moderated by the presence of at least one large external block holder.

9.6 Conclusion

According to results from the application of system GMM panel analysis, it is found that large block holders positively moderate the relationship between market-return performance and CEO total cash reward. It is further found that the percentage of stock held by the top 20 shareholders, on average, lowers the level of CEO total cash reward. On the basis of these findings it appears that external shareholders are important *foci* of board deliberations on the level of fixed and performance-contingent CEO cash reward levels. Boards in the presence of a large block holder will be more likely to promulgate Agency Theoretic notion of CEO reward for performance. The following chapter explores the influence of board structural characteristics purported to improve board overall effectiveness on the relationship between CEO cash reward and performance

Chapter Ten

Board Governance as a Moderator of CEO Cash Reward and Performance

10.1 Introduction

Taken together, the findings that are presented in Chapters Six to Nine provide evidence that, in *a priori* terms, Australian boards have in recent times been largely ineffectual in managing the relationship between CEO cash reward and company performance. The insensitivity between reported 'performance-based' CEO cash reward, and measures of company performance, casts doubt on the ability and/or willingness of Australian boards to validly and reliably measure CEO performance and provide commensurate cash rewards. This is quite surprising given that the past decade has witnessed major developments in the area of corporate governance regulation and codes of best practice; developments that, in large part, have ostensibly been aimed at enhancing overall board monitoring and decision effectiveness. Proponents contend that 'best practice' corporate governance initiatives, particularly enhancement of director and board 'independence', remain the best means of increasing overall board task performance and of negating executive entrenchment and board 'capture'. The guiding premise of this final empirical chapter, however, is that corporate governance 'best practice' prescriptions can only be deemed 'best practice' when they are shown to materially improve the board's management of the relationship between CEO cash reward and firm-level performance.

In other words, the purpose of this chapter is to test the empirical validity of board 'independence' as a criterion-relevant measure of the board's effectiveness in managing CEO reward and performance. To this end, system GMM panel analysis is localised to testing the moderating effects of board structural characteristics such as board independence at the board chair, general board and nomination and remuneration committee levels among the top 500 Australian listed companies over the period 1999-2006. Specifically, we test whether board governance practices promoting 'independence' at the board and committee level, as well as at the chair level, do impact on: i) the total CEO cash reward levels; ii) the level of CEO performance contingent cash reward; and iii) the sensitivity of CEO cash rewards to measures of firm-level performance. The results presented have important implications for the efficacy of corporate governance best practice codes to enhance board effectiveness with respects to the management of CEO cash reward and performance.

10.2 Board 'Independence' and CEO Reward: Theory, Evidence, and Hypotheses

Earlier chapters maintain that both the Managerial Power and Agency Theory perspectives assume that board independence from management must be preserved or restored in order to enhance the board's ability to procure more effective or optimal CEO reward processes and independent judgment and strategic choice. Eisenhardt (1989) argues that boards should have large proportions of outside directors to enhance board decision-making, and to buttress the validity and reliability of judgments and decisions. Structural mechanisms that are said to enhance the quality and effectiveness of board decisions and judgments include: board structural independence at the board and committee level; having remuneration and nomination committees independent of the CEO; director equity ownership and incentives; and having 'independent' board chairpersons. These board governance practices are purported to enable better board judgments and monitoring, including making more appropriate reward decisions and providing constraints against managerial opportunism, incentive distortion, and rent extraction. On this basis, we might expect boards demonstrating a higher degree of material independence from salaried executives to be more adept at controlling and managing CEO cash reward and performance. Governance practices conducive to heightened board independence might also be assumed to positively moderate the relationship between CEO cash reward and firm-level performance. Therefore this chapter empirically tests the following propositions:

Proposition 7a: Board 'Independence' at the board chair, board, and committee level is negatively associated with CEO total cash reward.

Proposition 7b: Board 'Independence' at the board chair, board, and committee level is negatively associated with CEO annual (?) cash reward.

Proposition 8a: The presence of a non-executive dominated remuneration or a nomination committee is negatively associated with CEO total cash reward.

Proposition 8a: The presence of a non-executive dominated remuneration or a nomination committee is negatively associated with CEO annual incentive cash reward.

Before examining the hypotheses tested in this chapter, it is important to clarify one of the chief concepts tested in this chapter, namely the notion of board 'independence' itself. The

ASX Council of Good Governance defines an 'independent' non-executive director as someone who is:

“... independent of management and free of any business or other relationship that could materially interfere with – or could reasonably be perceived to materially interfere with - the exercise of their unfettered and independent judgment.” (ASX Corporate Governance Council, 2003: 19)

OECD principles corroborate this logic in suggesting that independent directors are both more adept at exercising independent judgment and also better placed to help ensure proper compliance with committee charters (OECD, 2004: 25).

Following on from the discussion in Chapter Four, recent Australian corporate governance regulatory interventions and best practice principles intended to improve the management of CEO reward and performance, perpetuate the institutional logic shared by these theoretical perspectives. Indeed, corporate governance codes of best practice are predicated on Agency Theory prescriptions and assumptions in two ways. First, they perpetuate Agency Theory by encouraging boards to make CEO rewards more performance contingent. Second, they perpetuate both Agency Theory and Managerial Power postulates by inculcating board governance practices that reinforce director independence from salaried executives. Independence is thus considered an axiom to enhance board decision and monitoring effectiveness. For example, it is suggested that having a greater presence of independent directors at both board and committee level will enable the board to exercise greater independent judgment and diligence in relation to executive reward (see ASX Principles of Good Governance, 2003). The unstated assumption underlying 'best practice' prescriptions is that CEO entrenchment inhibits board decision-making effectiveness.

Some studies challenge whether having a non-executive director dominated board enhances boards' ability to exercise independent judgment with respects to manage the performance contingency of CEO reward (see Devers *et al.*, 2007 for a review, and Deutsch 2005, for a meta-analysis). Westphal (1998) provides evidence in support of this supposition by finding that the CEO will still exert interpersonal influence on the board even when there is a large proportion of outside directors on the board. Unfortunately, the extant research does not

elucidate how these findings enhance our current understanding of board decision-making pertaining to CEO reward and performance.

The modelling in this chapter utilises five measures of non-executive director presence as separate and conjoint explanatory variables. The first of these is the presence of a non-executive' board chairperson; with a dummy variable equal to 1 used if the chairperson is a non-executive director, and 0 if otherwise. The second explanatory variable is the percentage of board directors who are non-executives. The third variable is the percentage of non-executive director shareholders on the board. This information was extracted from sections of company annual report detailing director equity holdings.²⁴ The fourth variable is the presence of a remuneration committee where non-executives are in the majority. A dummy variable equal to 1 is used if the firm has a remuneration committee where the majority of members are non-executive directors and does not include the CEO, and 0 if otherwise. The fifth variable is the presence of a nomination committee in which non-executives are in the majority and does not include the CEO, and a same binary coding is applied.²⁵

Non-executive chairpersons

Chapter Four maintains that corporate governance regulation has specific implications for board task performance. Board leadership is a recurrent theme in corporate governance theory and prescription. It is argued that combining the role of board chairperson and CEO creates the conditions for board complicity or capture, and renders board directors beholden to the CEO (Bebchuk and Fried, 2004; Cadbury, 2002; Huse, 2005). Separating these roles are proffered as a solution to increasing the board's capacity to monitor the CEO and advance the interests of shareholders (Cadbury, 2002). Corporate governance best practice codes and prescriptions, both locally and abroad, have reflected these considerations.

²⁴ The ASX Principles of Good Governance define an 'independent' director as someone who does not have substantial shareholders in the company. The measure used in this thesis did not account for the concentration of director holdings, but rather captured the incidence of non-executive directors with share holdings. Nonetheless, the concentration of holdings among the non-executive directors would be an interesting locus of enquiry in more case-specific research, rather than aggregate statistical analysis.

²⁵ The ASX guidelines encourage board nomination and remuneration committees to have a majority of 'independent' director members, as well as an 'independent' chairperson. To ease the extraction of data, whether or not the chair was non-independent has not been captured in the measure.

In the Australian context, independence at the board chair level has emerged as one of the most prominent signifiers of good governance. For instance, the ASX principles of good governance recommend that ‘the chairperson should be an independent non-executive director’ (ASX Corporate Governance Council, 2003: 21). Thus, chair non-executive status and independence is encouraged on the premise that this structural imposition enables the board to ‘add value’ (2003: 19). Best practice prescriptions also depict independent chairpersons as more effective leaders of the board (see ASX Principles of Good Governance, 2003).

In summary, chair independence, and particularly the separation of the chair’s role from that of the CEO, is considered a positive indicator of board effectiveness and task performance. What is particularly surprising here is the absence of solid empirical backing for this assumption. Indeed, in reviewing the literature, no data are found on the association between CEO reward and performance, and board leadership.

Nevertheless, according to the logic underpinning these prescriptions, we might expect boards demonstrating a higher degree of material independence from salaried executives to be more adept at controlling and managing CEO cash reward and performance. Governance practices conducive to heightened board independence might also be assumed to positively moderate the relationship between CEO cash reward and firm-level performance. It is intuitive to expect that enhanced board leadership is in turn associated with: i) lower levels of cash reward; ii) increases in the incentive component of total cash rewards; and iii) a closer alignment between reported CEO cash rewards and measures of firm-level performance. Thus:

Hypothesis 10.1a: CEOs in firms with a non-executive chairperson earn significantly lower levels of total cash reward than otherwise.

Hypothesis 10.1b: Having a non-executive chairperson positively moderates the relationship between CEO total cash reward and lagged performance in such a way that the relationship is stronger when the chairperson is a non-executive.

Hypothesis 10.1c: CEOs in firms with a non-executive chairperson earn a higher level of performance-based cash reward than otherwise.

Hypothesis 10.1d: Having a non-executive chairperson positively moderates the relationship between lagged stock returns and the level of CEO incentive cash reward in such a way that the relationship is stronger when the chairperson is a non-executive.

Hypothesis 10.1e: CEOs in firms with a non-executive chairperson earn significantly lower levels of total non-incentive cash reward than otherwise.

Hypothesis 10.1f: Having a non-executive chairperson positively moderates the relationship between CEO total non-incentive cash reward and real lagged annual stock return in such a way that the relationship is stronger when the chairperson is a non-executive.

Non-executive Directors

As noted in Chapter Three, a meta-analysis by Deutsch (2005) of studies examining the main effects of board composition on the level and composition of CEO total reward reports two important findings. First, the percentage of outside directors – that is, directors not recruited from the ranks of the firm’s salaried executives - has no significant main effect on the level of CEO total reward. Second, the percentage of outside directors negatively predicts the proportion of total CEO reward that is performance-based (for specific examples, see Dalton, 1998; Westphal, 1998). Despite this, some empirical evidence challenges this postulate by showing that having more independent directors is inversely related to CEO total cash reward (Lippert and Moore, 1994; Core *et al.*, 1999).

Yet here too, despite the absence of conclusive empirical support the ideal of the independent non-executive director continues to be entrenched as an indicator of good governance and board task performance in corporate governance regulation. Independence at the board level is purported to enable the board to make ‘value adding’ decisions and judgments, with the ASX’s Corporate Governance Council recommending that ‘a majority of the board should be independent directors’ (Principle 2, ASX Corporate Governance Council, 2003: 19). This prescription is predicated on the assumption that board structural independence improves board effectiveness to discharge its responsibilities at the same time as resisting managerial influence.

Accordingly, with the aim of putting these assumptions to the test, and in line with the reward variables considered throughout the thesis, it may be hypothesized that:

Hypothesis 10.2a: There is a significant inverse relationship between the percentage of non-executive directors on the board and the level of CEO total cash reward.

Hypothesis 10.2b: The percentage of non-executive directors on the board positively moderates the relationship between the levels of total CEO cash reward and lagged real annual stock returns in such a way that the relationship is stronger when the percentage is high than when it is low.

Hypothesis 10.2c: There is a significant positive relationship between the percentage of non-executive directors on the board and the level of reported CEO annual incentive cash reward.

Hypothesis 10.2d: The percentage of non-executive directors on the board positively moderates the relationship between the levels of annual incentive CEO cash reward and lagged real annual stock returns in such a way that the relationship is stronger when the percentage is high than when it is low.

Hypothesis 10.2e: There is a significant inverse relationship between the percentage of non-executive directors on the board and the level of CEO total non-incentive cash reward.

Hypothesis 10.2f: The percentage of non-executive directors on the board positively moderates the relationship between the levels of total non-incentive CEO cash reward and lagged real annual stock returns in such a way that the relationship is stronger when the percentage is high than when it is low.

Shareholdings by Non-executive Directors

Following on from the discussion of Australian Corporate Governance in Chapter Four, in its conceptualisation of board member ‘independence’, Australian corporate governance regulation does not consider director share ownership to be a valid requirement for, or indicator, of board effectiveness. According to the ASX Corporate Governance Council (2003: 20), directors are no longer independent when they are substantial shareholders in the company. Moreover, while Australian corporations law has long required the reporting of director equity ownership, the ASX’s voluntary code of practice makes no recommendation about encouraging share ownership among directors through target ownership plans.

While this accords with the ideal of director stewardship, it can also be seen as running counter to agency theory prescriptions for alignment of material interest between owners and those appointed to oversee their interests. Exponents of the managerial power model make a comparable argument. For instance, Bebchuk and Fried (2004) have criticised the dearth of outside director target ownership plans, even though outside director ownership has intuitive appeal in terms of providing board-shareholder alignment incentives. It follows that those board directors, who have an equity interest in the company, will have a greater interest in guarding against managerial opportunism and rent-extraction.

The view that director ownership negates director independence also runs counter to research findings indicating that increasing ownership among non-executive directors militates against managerial power and aligns more closely the interests of shareholders and directors. For instance, Core *et al.* (1999: 387) report that in the UK context a 1% increase in the percentage of stock owned by outside directors reduces total CEO reward by \$21,183. In other words, these findings indicate that increasing ownership among outside directors can potentially restore director incentives to constrain CEO reward and to manage the CEO reward-performance relationship more effectively.

On the basis of these possibilities, it may be proposed that:

Hypothesis 10.3a: There is a significant inverse relationship between the percentage of non-executive director shareholders on the board and the level of CEO total cash reward.

Hypothesis 10.3b: The percentage of non-executive director shareholders on the board positively moderates the relationship between the level of total CEO cash reward and lagged real annual stock returns in such a way that the relationship is stronger when the percentage is high than when it is low.

Hypothesis 10.3c: There is a significant positive relationship between the percentage of non-executive director shareholders on the board and the level of reported CEO incentive cash reward.

Hypothesis 10.3d: The percentage of non-executive director shareholders on the board positively moderates the relationship between the level of incentive CEO cash reward and

lagged real annual stock returns in such a way that the relationship is stronger when the percentage is high than when it is low.

Hypothesis 10.3e: There is a significant inverse relationship between the percentage of non-executive director shareholders on the board and the level of CEO total non-incentive cash reward.

Hypothesis 10.3f: The percentage of non-executive director shareholders on the board positively moderates the relationship between the level of total non-incentive CEO cash reward and lagged real annual stock returns in such a way that the relationship is stronger when the percentage is high than when it is low.

Non-executive dominated Remuneration and Nomination Committees

In Chapter Four it is observed that corporate governance regulation in the Australian context encourages the creation of task-specific board committees dominated by 'independent' directors. The standard model of corporate governance now favoured in Australia, the US, and the UK, advocates the formation of independent board committees consisting of a majority of independent directors (Cadbury, 2002; see recommendation 9.2 ASX Corporate Governance Council, 2003). For the ensuing analysis, all remuneration and nomination committees refer to those that are dominated by non-executive directors, and exclude CEOs.

Having independent audit, nomination, and remuneration committees is considered to improve the effectiveness with which the board discharges its duties to shareholders. For example, having an independent remuneration committee is presumed to improve the board's effectiveness in structuring CEO rewards. By extension, non-executive dominated remuneration committees are assumed to be more adept at enforcing optimal contracts because they are purportedly more resistant to managerial power (Bebchuk and Fried, 2004). Consistent with these assertions, in the Australian context, the ASX Corporate Governance Council recommends: "The board should establish a remuneration committee chaired by an independent director, and consist of a majority of independent directors." (Principle 9, 2003: 54). Independent remuneration committees are thus assumed to be more adept at managing CEO rewards, and, in particular, more adept at aligning providing CEOs with performance incentives, and subsequently aligning CEO rewards with performance Principle 9, ASX Corporate Governance Council, 2003: 54).

Again, however, there is no consistent empirical evidence that having a remuneration committee positively moderates the relationship between CEO cash reward and firm-level performance (see Conyon and Peck, 1998; Dalton, 1998). These results are consistent with those reported by Dalton (1998), who finds that remuneration committee presence *per se* has no influence on the relationship between CEO reward and performance.

As such, it is also appropriate to test the validity of these committee-related best practice prescriptions. In order to do so, we hypothesise as follows:

Hypothesis 10.4a: CEOs in firms with a non-executive director dominated remuneration committee earn significantly lower levels of total cash reward than otherwise.

Hypothesis 10.4b: Having a non-executive director dominated remuneration committee positively moderates the relationship between CEO total cash reward and lagged performance in such a way that the relationship is stronger when the committee is non-executive dominated than when it is not.

Hypothesis 10.4c: CEOs in firms with a non-executive director dominated remuneration committee earn a higher level of performance-based cash reward than otherwise.

Hypothesis 10.4d: Having a non-executive director dominated remuneration committee positively moderates the relationship between lagged stock returns and the level of CEO incentive cash reward in such a way that the relationship is stronger when it is the committee is non-executive dominated than when it is not.

Hypothesis 10.4e: CEOs in firms with a non-executive director dominated remuneration committee earn significantly lower levels of total non-incentive cash reward than otherwise.

Hypothesis 10.4f: Having an non-executive director dominated remuneration committee positively moderates the relationship between CEO total non-incentive cash reward and real lagged annual stock returns in such a way that the relationship is stronger when the committee is non-executive dominated than when it is not.

As is the case with remuneration committees, a review of international literature produced no data on the relationship between CEO reward and performance, and nomination committees. Yet, in best practice prescriptions, the same assumptions are made in regard to the potential influence of independent nomination committees. These committees are considered important in terms of enhancing board decision by ensuring that the board, in aggregate, has the skills, knowledge, experience, and traits to make effective decisions on all dimensions of board task performance. According to the ASX Corporate Governance Council, independent nomination committees are important for the management of board task performance, and ensuring that directors have the required competencies and capabilities to discharge their responsibilities effectively, and monitoring the effectiveness of board performance more generally (ASX Corporate Governance Council, 2003: 21).

Accordingly, it can be hypothesised that:

Hypothesis 10.5a: CEOs in firms with non-executive director dominated nomination committee earn significantly lower levels of total cash reward than otherwise.

Hypothesis 10.5b: Having a non-executive director dominated nomination committee positively moderates the relationship between CEO total cash reward and lagged performance in such a way that the relationship is stronger when the committee is non-executive dominated than when it is not.

Hypothesis 10.5c: CEOs in firms with a non-executive director dominated nomination committee earn a higher level of performance-based cash reward than otherwise.

Hypothesis 10.5d: Having a non-executive director dominated nomination committee positively moderates the relationship between lagged stock returns and the level of CEO incentive cash reward in such a way that the relationship is stronger when the committee is non-executive dominated than when it is not.

Hypothesis 10.5e: CEOs in firms with a non-executive director dominated nomination committee earn significantly lower levels of total non-incentive cash reward than otherwise.

Hypothesis 10.5f: Having a non-executive director dominated nomination committee positively moderates the relationship between CEO total non-incentive cash reward and real lagged annual stock returns in such a way that the relationship is stronger when the committee is non-executive dominated than when it is not.

The following sections present the descriptive results and multivariate regression estimates testing the hypothesised relationships between measures of board governance best practice and CEO cash rewards.

10.3 Econometric Model

The hypotheses were tested by estimating the dynamic panel econometric model specified below, with board governance taken as the vector for all five measures of board-principal alignment mechanisms.

$$\begin{aligned}
 CEO_{TotalCash}_{i,t} = & \alpha + \beta_0 CEO_{TotalCash}_{i,t-1} + \beta_1 TotalAssets_{i,t-1} + \beta_2 TotalRisk_{i,t} + \\
 & \beta_3 RealReturns_{i,t-1} + \beta_4 IncomingCEOs_{i,t} + \beta_5 OutgoingCEOs_{i,t} + \\
 & \mu \beta_6 BoardGovernanceMeasure_{i,t-1} + \beta_7 BoardGovernance_{i,t} \\
 & + \beta_8 RealReturns_{i,t-1} + \mu_i + \varepsilon_{i,t}
 \end{aligned}$$

Where:

- *Size* is indexed by the natural logarithm of total assets in year t-1.
- *FirmRisk*, indexed by the cumulative distribution function of firm returns of 36 months prior (see Aggarwal and Samwick, 1999 for methodology).
- *MarketReturn* is measured as annual real stock returns.
- *OwnershipConcentration* is the vector for two measures of ownership concentration that are modelled alternatively. These measures include the percentage of ordinary stock owned by the top shareholder, and the top 20 shareholders in year t-1.
- *BoardGovernance* is the vector of the five board governance measures.
- *Turnover* is the vector for incoming and outgoing CEO dummy variables to control for abnormalities associated with sign-on payments, termination payments, and salary payments covering only part of the report year.

Separate equations were measured for each of these explanatory variables, whilst co-varying out the effects of firm size, firm risk, and performance, as well as turnover episodes. An *a priori* assumption of this thesis is that boards can evaluate CEO performance against differential measures of firm level performance. A corollary is that accounting return measures are commonly used to determine annual cash incentive rewards. It is conceivable, for instance, that CEO annual cash incentives can be insensitive to market return performance measures but sensitive to annual accounting performance measures. In recognition of this, as well as of the possibility of differential sensitivity among different reward components, and consistent with the approach taken in other chapters, the equation above was also estimated using an accounting return measure, namely ROE.

To test the hypothesised relationships, a dynamic panel model estimator was used. Chapter Five presented a detailed rationale for this approach. A two-step system (GMM) approach was used on the premise that it is more appropriate for estimating models with lagged explanatory variables. This is because the inclusion of a lagged independent variable in the x-vector, by default, violates classical linear model assumptions regarding the orthogonality of the x and disturbance vectors (Sayers, 1989). Results presented in Chapter Six demonstrate through specification tests the efficiency of using a system GMM approach rather than using fixed effects or instrumental variable estimators. The results reported in Chapter Six also indicated that performance variables are not strictly endogenous. This has intuitive appeal, especially considering that unobservable factors such as managerial ability, and other external and internal and unmeasured time variant factors, can impact on performance, rendering performance variables endogenous to the disturbance error structure. To recap, the relative merit of using the system GMM approach is that it controls for the possibility of endogeneity from both omitted unobserved effects, and serial correlation (Roodman, 2007). Let us turn our attention to the results.²⁶

10.4 Results

²⁶ Hansen test for overidentification of results were presented in the results tables. According to the tests, none of the system GMM regressions were over-identified in terms of their instruments. In all cases, the chi-square values are non-significant.

In terms of the descriptive analysis, the annual means for the key explanatory variables were calculated to ascertain the extent to which the companies sampled demonstrated best practice board governance structures at the board and committee level, and, in particular, to establish whether there has been a linear trend in the adoption of these best practice principles in recent times.

Exhibit 10.1 presents the annual incidence of the five selected board governance measures for an open cohort of ASX Top500 firm between 1999 and 2006 inclusive, with the final sample being between 424 and 560 firms, depending on the variable concerned.

In aggregate, the results suggest an increasing trend in the preponderance of non-executive chairpersons, the percentage of non-executive directors, and non-executive director shareholders, as well as for independent nomination and remuneration committees. As such, these descriptive results show an increasing subscription to best practice models of board governance, and, in particular, ASX Corporate Governance Council's (2003) recommendations. These results are consistent with those of Kiel and Nicholsohn (2003) who suggest that relative to the UK and the USA, Australia has shown a demonstrably greater adherence to prescriptions for board structural independence.

From 1999 to 2006, on average there was a seven-percentage point increase in the presence of Non-Executive Chairpersons in the sample: from 73% in 1999 to 80% in 2006. Over the same period there was a five percentage point increase the presence of Non-Executive Directors and the same increase in the percentage of Non-Executive Directors holding shares in the firm: from 66% in 1999 to 71% in 2006, and 51% in 1999 to 56% in 2006 respectively. Over the same period, the incidence of Non-Executive dominated Remuneration and Nomination Committees with a majority of non-executive members rose more sharply still. In 1999, 54% of firms reported having a formal remuneration committee; by 2006 this figure had risen to 78%. Over the same period, there was a 33-percentage point increase in the incidence of Nomination committees: in 1999, 18% of firms sampled reported having a formal nomination committee; in 2006, the incidence was 51%. The results presented in Exhibit 10.1 thus provide strong evidence of an increasing convergence towards normative models of corporate governance.

Exhibit 10.1. Annual Means of Board Governance Measures

Year	Non-Executive Chair	%Non-Executive Directors	% Non-Executive Director Shareholders	Remuneration Committee	Nomination Committee
1999	73%	66%	51%	54%	18%
2000	73%	67%	52%	59%	19%
2001	75%	67%	52%	61%	17%
2002	76%	68%	53%	64%	21%
2003	78%	69%	53%	67%	30%
2004	77%	69%	53%	72%	43%
2005	71% ²⁷	70%	55%	76%	48%
2006	80%	71%	56%	78%	51%

This general trend to greater compliance with best practice prescriptions is undoubtedly attributable to the combined influence of more stringent legislative requirements (especially following the enactment of the CLERP 9 legislation in 2004) and the ASX's proactive role in tightening voluntary code expectations. However, it is important to note that the trend actually predates the introduction of the ASX Corporate Governance Council's (2003) *Principles of Good Governance*, and suggests that firms responded well to prior corporate governance prescriptions embedded in corporations' law, and other relevant reports described in Chapter Four.

Exhibit 10.3 presents the Pearson's bivariate correlation coefficients for all model variables. The results suggest that there is little bivariate support for the predicted main effects of the five governance measures on all three cash reward measures. It appears that all five governance variables are positively correlated ($r > 0$) with the level of CEO total cash reward, the level of incentive cash reward, and the level of non-incentive cash reward both in year t and $t-1$, and negatively related to the proportion of total cash CEO reward that is performance-based ($r < 0$). Contrary to prediction, the results in Exhibit 10.3 suggest that these governance

²⁷ While it is unclear why this figure is anomalous, it may be speculated that the anomaly may be associated in some way with the advent of CLERP9.

measures are also positively correlated with the level of Total Non-Incentive Cash Reward, the level of Total Cash Reward.

Exhibit 10.2. Pearson's Bivariate Correlations

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 CEO Total Cash	13.14	0.87	1																
2 CEO Total Cash _{t-1}	13.13	0.86	0.890***	1															
3 CEO Annual Incentive Cash _t	11.78	1.23	0.790***	0.754***	1														
4 CEO Annual Incentive Cash _{t-1}	11.77	1.25	0.733***	0.787***	0.902***	1													
5 CEO Non-Incentive Cash _t	12.67	0.94	0.781***	0.650***	0.349***	0.322***	1												
6 CEO Non-Incentive Cash _{t-1}	12.64	0.92	0.674***	0.774***	0.351***	0.336***	0.802***	1											
7 Size _t	18.41	2.26	0.646***	0.613***	0.402***	0.366***	0.696***	0.678***	1										
8 Firm Risk _t	0.51	0.28	-0.372***	-0.358***	-0.215***	-0.195***	-0.407***	-0.403***	-0.656	1									
9 Incoming CEOs _t	0.16	0.36	-0.108***	-0.022	-0.044**	-0.031	-0.136***	-0.036***	-0.084	0.101	1								
10 Outgoing CEOs _t	0.14	0.35	-0.021	-0.024	-0.027	-0.018	-0.036***	-0.035*	-0.054	0.086	-0.002	1							
11 Real Returns _t	16.96	70.99	-0.008	-0.024	0.001	-0.019	0.003	-0.011	-0.027	0.036	-0.021	-0.077	1						
12 Real Returns _{t-1}	17.17	74.15	0.027	0.004	-0.007	-0.002	0.057***	0.023	0.022	0.026	-0.067	-0.056	0.025	1					
13 Non-executive Chair _{t-1}	0.75	0.43	0.105***	0.093***	0.027***	0.021	0.156***	0.142***	0.152***	-0.139***	0.026	0.011	-0.035*	0.050**	1				
14 Non-executive directors _t (%)	68.30	19.15	0.150***	0.138***	0.094***	0.075***	0.183***	0.181***	0.267***	-0.222***	0.033*	0.044**	0.015	-0.006	0.048***	1			
15 Non-executive director Shareholders _{t-1} (%)	53.60	26.59	0.222***	0.202***	0.121***	0.110***	0.271***	0.254***	0.305***	-0.330***	-0.039	-0.012	0.032	0.043**	0.341***	0.356***	1		
16 Remuneration Committee _{t-1}	0.65	0.48	0.281***	0.266***	0.109***	0.085***	0.371***	0.364***	0.351***	-0.260***	-0.043	-0.040	-0.036	-0.012	0.144***	0.219***	0.155***	1	
17 Nomination Committee _{t-1}	0.29	0.45	0.334***	0.314***	0.195***	0.178***	0.375***	0.359***	0.398***	-0.290***	-0.031	-0.019	-0.027	-0.012	0.126***	0.203***	0.205***	0.429***	1

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Non-executive Chairperson

Exhibit 10.3 presents the estimated coefficients testing the moderating effects of having a non-executive chairperson at the board level on the relationship between four measures of CEO cash reward and real annual stock returns.

Having a non-executive chairperson on the board is widely considered to be an indicator of board task effectiveness. Consistent with this supposition, it was predicted that firms with a non-executive chairperson would provide their CEOs with significantly lower levels of CEO total cash reward than would otherwise be the case, or at the very least, would have CEO total cash reward levels that were significantly more aligned with lagged annual real returns. The estimated coefficients in Exhibit 10.3 are inconsistent with these predictions. It appears that having a non-executive chair does not significantly predict the level of CEO total cash reward (Hypothesis 10.1a; $\beta = 0.028$, $p = 0.314$), especially in the direction predicted ($\beta < 0$). Nor does it positively moderate the relationship between CEO cash reward and annual Real returns (Hypothesis 10.1b; $\beta = -0.001$, $p = 0.125$). It was also predicted that the presence of a non-executive chairperson positively predict the level of CEO incentive cash reward (Hypothesis 10.1c), and positively moderate the extent of reward for stock return performance (Hypothesis 10.1d). Both these predictions are rejected on the basis of the estimated coefficients presented Exhibit 10.3. While the estimated coefficients of the main effect and predicted moderating effect of having a non-executive chair on the level of CEO annual incentive cash reward were in the predicted direction ($\beta > 0$; $\beta = 0.031$ and $\beta = 0.000$ respectively), the estimate was non-significant ($p = 0.398$ and $p = 0.897$ respectively).

Contrary to prediction (hypothesis 10.1e) it appears that CEOs receive significantly greater levels of Total Non-Incentive Cash Reward when the chairperson is a non-executive director ($\beta = 0.998$, $p < 0.05$). Moreover, having a non-executive chair does little by way of positively moderating the relationship between total-non-incentive cash rewards and lagged real returns ($\beta = -0.000$, $p = 0.424$). On the basis of this result, Hypothesis 10.1f is rejected.

Exhibit 10.3. The Influence of Board Chair Independence on CEO Cash Reward, with Real Annual Stock Returns.

	CEO Total Cash ^a	CEO Annual Incentive Cash ^a	CEO Total Non-incentive Cash ^a
Board Governance Measure:			
Non-Executive Chair _{t-1} ^c	0.029 (0.028)	0.031 (0.037)	0.100* (0.047)
Non-Executive Chair _{t-1} *RealReturn ^{t-1}	-0.001 (0.001)	0.000 (0.000)	0.000 (0.000)
Controls:			
Firm Risk ⁱ	-0.039 (0.111)	-0.035 (0.119)	0.219 (0.150)
Size _{t-1} ^a	0.045 (0.020)	0.032 (0.017)	0.187*** (0.021)
Incoming CEO _t ^c	-0.228*** (0.027)	-0.039 (0.026)	-0.224*** (0.030)
Outgoing CEO _t ^c	0.049 (0.028)	-0.037 (0.026)	0.080* (0.039)
CEO Total Cash Reward _{t-1} ^a	0.846*** (0.058)		
CEO Annual Incentive Cash Reward _{t-1} ^a		0.867*** (0.036)	
CEO Total Non-incentive Cash _{t-1} ^a			0.369*** (0.039)
Real Returns _t ^b	0.001 (0.001)	0.001 (0.000)	0.000 (0.000)
Real Returns _{t-1} ^b	0.001 (0.001)	0.000 (0.000)	0.000 (0.000)
Constant	1.228* (0.581)	0.957* (0.475)	4.415*** (0.567)
Observations	2955	2955	2955
Hansen Test of Overidentification	$\chi^2=118.21$	$\chi^2=117.04$	$\chi^2=170.97$

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors in parenthesis

Exhibit 10.4 presents the estimated coefficients of the moderating effects of having a non-executive chairperson on the relationship between all three reward measures and firm accounting returns indexed by ROE. According to these estimated coefficients, it appears that having a Non-Executive Chair did not have a significant main effect on any of the cash

reward measures, nor was there evidence of a positive moderator effect on CEO cash reward-performance sensitivity. In short, as with market performance, the presence of a non-executive chair makes no difference to the degree of reward sensitivity to lagged accounting returns. These results do not furnish support for Hypotheses 10.1a-10.1f.

Exhibit 10.4. The Influence of Board Chair Independence on CEO Cash Reward, with ROE.

	CEO Total Cash ^a	CEO Annual Incentive Cash ^a	CEO Total Non-incentive Cash ^a
Board Governance Measure:			
Non-Executive Chair _{t-1} ^c	0.029 (0.037)	0.003 (0.048)	0.044 (0.0413)
Non-Executive Chair _{t-1} *ROE _{t-1}	0.001 (0.001)	0.002 (0.001)	0.000 (0.001)
Controls:			
Firm Risk _t	0.108 (0.122)	0.062 (0.168)	0.1805 (0.145)
Size _{t-1} ^a	0.068 (0.036)	0.057 (0.036)	0.131** (0.048)
Incoming CEO _t ^c	-0.260*** (0.031)	-0.061 (0.035)	-0.292*** (0.040)
Outgoing CEO _t ^c	0.039 (0.032)	-0.092** (0.036)	0.050 (0.044)
CEO Total Cash _{t-1} ^a	0.834*** (0.078)		
CEO Annual Incentive Cash _{t-1} ^a		0.918*** (0.050)	
CEO Total Non-incentive Cash _{t-1} ^a			0.620 (0.114)
ROE _t ^b	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)
ROE _{t-1} ^b	0.000 (0.001)	-0.001 (0.001)	0.001 (0.001)
Constant	0.885 (0.682)	-0.124 (0.738)	2.338** (0.909)
Observations	2430	2430	2430
Hansen Test of Overidentification	$\chi^2=83.07$	$\chi^2=83.08$	$\chi^2=91.84$

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors in parenthesis

Non-executive directors.

Exhibit 10.5 presents the estimated coefficients relating to the moderating effects of the proportion of non-executive directors on the board on the relationship between the four measures of CEO cash reward and real annual stock returns.

None of the predictions made in relation to the main and moderating effects of the percentage of non-executive directors are supported by the estimated coefficients presented in Exhibit 10.5. The percentage of non-executive directors on the board was predicted to have a positive main effect on the level of CEO incentive cash reward (Hypothesis 10.2c) and to total CEO cash reward (Hypothesis 10.2a), and to negatively predict the level of total cash reward and the level of total non-incentive cash CEO reward (Hypotheses 10.2e). All of these hypothesised main effects are rejected on the basis of the estimated coefficients presented in Exhibit 10.5.

Exhibit 10.6 presents the estimated coefficients using ROE as the firm-level performance measure rather than real annual stock returns. It appears that the estimates remain qualitatively unchanged when a firm-level accounting return measure is operationalised. Again, the hypothesis main and moderator effects of having a large percentage of non-executive directors on the board does not positively moderate the relationship between all three cash reward measures and ROE.

On the basis of corporate governance prescriptions in the Australian context, independence at the board level, measured through the percentage of non-executive directors on the board, was predicted to positively moderate the relationship between lagged real returns, and the three different cash reward measures operationalised. The estimated coefficients reported here do not support these predictions.

Exhibit 10.5. The Influence of Board Independence on CEO Cash Reward, with Real Annual Stock Returns.

	CEO Total Cash ^a	CEO Annual Incentive Cash ^a	CEO Total Non-incentive Cash ^a
Board Governance Measure:			
Non-executive directors on the board _{t-1} ^b	-0.001 (0.001)	0.000 (0.001)	0.000 (0.001)
Non-executive directors _{t-1} ^c	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Real Return _{t-1}			
Controls:			
Firm Risk _t	-0.058 (0.101)	0.024 (0.150)	-0.041 (0.128)
Size _{t-1} ^a	0.046*** (0.020)	0.032 (0.023)	0.107*** (0.027)
Incoming CEO _t ^c	-0.226*** (0.026)	-0.043 (0.026)	-0.285*** (0.034)
Outgoing CEO _t ^c	0.059* (0.029)	-0.021 (0.028)	0.082* (0.038)
CEO Total Cash _{t-1} ^a	0.862*** (0.058)		
CEO Annual Incentive Cash _{t-1} ^a		0.856*** (0.044)	
CEO Total Non-incentive Cash _{t-1} ^a			0.643*** (0.079)
Real Returns _t ^b	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)
Real Returns _{t-1} ^b	0.000 (0.001)	-0.002 (0.001)	0.001 (0.001)
Constant	1.12* (0.560)	1.141* (0.530)	2.662*** (0.731)
Observations	2960	2960	2960
Hansen Test of Overidentification	$\chi^2=122.05$	$\chi^2=130.73$	$\chi^2=141.40$

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors in parenthesis

Exhibit 10.6 The Influence of Board Independence on CEO Cash Reward, with ROE.

	CEO Total Cash ^a	CEO Annual Incentive Cash ^a	CEO Total Non-incentive Cash ^a
Board Governance Measure:			
Non-Executive directors on the board _{t-1} ^b	-0.002 (0.001)	-0.001 (0.002)	-0.001 (0.002)
Non-executive directors _{t-1} [*]	0.000	0.000	0.000
ROE _{t-1}	(0.001)	(0.001)	(0.001)
Controls:			
Firm Risk _t	0.019 (0.132)	0.049 (0.180)	0.066 (0.153)
Size _{t-1} ^a	0.091* (0.040)	0.075* (0.035)	0.114 (0.049)
Incoming CEO _t ^c	-0.233*** (0.027)	-0.050 (0.033)	-0.286*** (0.035)
Outgoing CEO _t ^c	0.054 (0.031)	-0.075* (0.034)	0.075* (0.037)
CEO Total Cash _{t-1} ^a	0.752*** (0.081)		
CEO Annual Incentive Cash _{t-1} ^a		0.874*** (0.049)	
CEO Total Non-incentive Cash _{t-1} ^a			0.645*** (0.099)
ROE _t ^b	-0.001* (0.001)	0.000 (0.001)	-0.001 (0.001)
ROE _{t-1} ^b	0.002 (0.003)	0.002 (0.002)	0.000 (0.003)
Constant	1.774** (0.707)	0.175 (0.630)	2.476** (0.814)
Observations	2836	2836	2836
Hansen Test of Overidentification	$\chi^2=88.76$	$\chi^2=89.83$	$\chi^2=96.08$

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard errors in parenthesis

Non-executive Director Shareholders

Exhibit 10.7 presents the estimated coefficients testing the moderating effects of the percentage of non-executive director shareholders on the board on the relationship between the three measures of CEO cash reward and real annual stock returns.

The results reported in Exhibit 10.7 suggest that the percentage of non-executive director shareholders on the board does not negatively predict the level of CEO total cash reward ($\beta = -0.000$, $p = 0.969$). On this basis Hypothesis 10.3a is rejected. The percentage of non-executive shareholders on the board was also predicted to positively moderate the relationship between the level of CEO total cash reward and lagged real stock returns (Hypothesis 10.3b). However, the estimated coefficient ($\beta = 0.000$, $p = 0.954$) is again inconsistent with predictions.

The percentage of non-executive director shareholders on boards was also predicted to have significant main effects on the level of annual incentive based cash rewards (Hypothesis 10.3c).

Exhibit 10.8 presents the estimated coefficients relating to non-executive director Shareholder presence using ROE as the firm-level performance measure. It appears that the estimates remain qualitatively unchanged when a firm-level accounting return measure is operationalised. Again, having a large percentage of non-executive director shareholders on the board does not positively moderate the relationship between all three cash reward measures, and ROE. These results do not furnish support for Hypotheses 10.3a-10.3f.

Exhibit 10.7 The Influence of Non-Executive Director Shareholders on CEO Cash Reward, with Real Annual Stock Returns.

	CEO Total Cash ^a	CEO Annual Incentive Cash ^a	CEO Non-incentive Cash ^a
Board Governance Measure:			
Non-executive director shareholders _{t-1} ^b	0.000 (0.001)	0.000 (0.001)	0.002 (0.001)
Non-Executive Director Shareholders _{t-1} *Real Return _{t-1}	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Controls:			
Firm Risk _t	-0.182 (0.106)	-0.131 (0.152)	-0.155 (0.136)
Size _{t-1} ^a	0.028 (0.017)	0.020 (0.021)	0.095*** (0.028)
Incoming CEO _t ^c	-0.207*** (0.028)	-0.039 (0.028)	-0.256*** (0.037)
Outgoing CEO _t ^c	0.046 (0.030)	-0.042 (0.027)	0.075 (0.042)
CEO Total Cash _{t-1} ^a	0.841*** (0.052)		
CEO Annual Incentive Cash _{t-1} ^a		0.849*** (0.043)	
CEO Total Non-incentive Cash _{t-1} ^a			0.606*** (0.088)
Real Returns _t ^b	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Real Returns _{t-1} ^b	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Constant	1.699** (0.548)	1.474** (0.538)	3.300*** (0.834)
Observation	2907	2907	2907
Hansen Test of Overidentification	$\chi^2=121.10$	$\chi^2=138.95$	$\chi^2=126.96$

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors in parenthesis

Exhibit 10.8 The Influence of Non-Executive Director Shareholders on CEO Cash Reward, with ROE

	CEO Total Cash ^a	CEO Annual Incentive Cash ^a	CEO Total Non- incentive Cash ^a
Board Governance Measure:			
Non-Executive Director Shareholders _{t-1} ^b	0.000 (0.001)	-0.002 (0.002)	0.001 (0.001)
Non-Executive Director Shareholders _{t-1} *ROE _{t-1}	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Controls:			
Firm Risk _t	0.017 (0.142)	-0.067 (0.206)	0.159 (0.141)
Size _{t-1} ^a	0.096* (0.042)	-0.002 (0.002)	0.106* (0.003)
Incoming CEO _t ^c	-0.240*** (0.027)	-0.060 (0.036)	-0.274*** (0.034)
Outgoing CEO _t ^c	0.052 (0.030)	-0.091* (0.037)	0.091 (0.039)
CEO Total Cash _{t-1} ^a	0.702*** (0.092)		
CEO Annual Incentive Cash _{t-1} ^a		0.832**** (0.060)	
CEO Non-incentive Cash _{t-1} ^a			0.605*** (0.095)
ROE _t ^b	-0.001 (0.000)	0.000 (0.001)	-0.001 (0.000)
ROE _{t-1} ^b	0.000 (0.001)	0.000 (0.002)	0.002 (0.001)
Constant	2.159** (0.704)	1.150 (0.886)	2.979*** (0.833)
Observations	2800	2800	2800
Hansen Test of Overidentification	x2=80.60	X2=95.32	X2=89.62

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard errors in
parenthesis

Non-executive Dominated Remuneration Committees

Exhibit 10.9 presents the estimated coefficients testing the moderating effects of having a non-executive director-dominated remuneration committee on the relationship between the three measures of CEO cash reward and real annual stock returns.

In line with best practice corporate governance principles, it was predicted that having an independent remuneration committee (indexed by having a majority of non-executive members) would negatively predict the level of CEO total cash reward (Hypothesis 10.4a), and positively moderate the relationship between CEO total cash reward and annual stock returns (Hypothesis 10.4b). Contrary to these predictions, the estimated coefficients presented in Exhibit 10.9 imply that CEOs in firms with such remuneration committees do not receive significantly lower levels of CEO total cash reward ($\beta = 0.057, p = 0.108$), nor do they necessarily receive total cash rewards that are significantly more sensitivity to lagged real stock returns ($\beta = -0.001, p = 0.125$).

Further, the results in Exhibit 10.9 do not furnish support for the prediction that CEOs in firms, which have remuneration committees, receive higher levels of incentive cash rewards (Hypothesis 10.4c). The predicted positive moderating effects of remuneration committee existence on the relationship between these reward measures and lagged real returns (Hypotheses 10.4b, d, f) were not supported by the estimated coefficients presented. Thus CEOs in firms with non-executive-dominated remuneration committees do not receive significantly different levels of CEO annual incentive cash, and CEO total cash reward.

Exhibit 10.9. The Influence of Non-executive Dominated Remuneration Committees on CEO Cash Reward, with Real Annual Stock Returns.

	CEO Total Cash ^a	CEO Annual Incentive Cash ^a	CEO Total Non-incentive Cash ^a
Board Governance Measure:			
Remuneration Committee _{t-1} ^c	0.057 (0.035)	0.009 (0.046)	0.098* (0.042)
Remuneration Committee _{t-1} *Real Return _{t-1}	-0.001 (0.001)	0.000 (0.001)	-0.001 (0.001)
Controls:			
Firm Risk _t	-0.176 (0.103)	-0.223 (0.155)	-0.097 (0.121)
Size _{t-1} ^a	0.022 (0.019)	0.010 (0.023)	0.095** (0.030)
Incoming CEO _t ^c	-0.217*** (0.028)	-0.027 (0.026)	-0.250*** (0.035)
Outgoing CEO _t ^c	0.041 (0.030)	-0.020 (0.027)	0.060 (0.038)
CEO Total Cash _{t-1} ^a	0.875*** (0.053)		
CEO Annual Incentive Cash _{t-1} ^a		0.868*** (0.044)	
CEO Total Non-incentive Cash _{t-1} ^a			0.660*** (0.084)
Real Returns _t ^b	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Real Returns _{t-1} ^b	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)
Constant	1.321* (0.569)	1.467** (0.570)	2.600*** (0.722)
Observation	2958	2958	2958
Hansen Test of Overidentification	$\chi^2=125.00$	$\chi^2=126.77$	$\chi^2=135.35$

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust standard errors in parenthesis

Interestingly, the estimated coefficients in Exhibit 10.9 also show that CEOs in firms with such committees, on average, receive significantly higher levels of total non-incentive or fixed cash reward than do CEOs in firms without such committees ($\beta = 0.098, p < 0.05$). The directionality of the coefficient is in the opposite direction to that predicted by Hypothesis 10.4e. Finally, the results do not furnish support for the prediction that CEOs in firms with remuneration committees receive fixed rewards that are more closely aligned with lagged real returns (Hypothesis 10.4f).

Exhibit 10.10 presents the estimated coefficients using ROE as the firm-level performance measure. It appears that the estimates remain qualitatively unchanged when a firm-level accounting return measure – ROE - is operationalised. Again, the hypothesised main and moderator effect of having a non-executive dominated remuneration committee does not positively moderate the relationship between the three CEO cash reward measures and ROE.

Exhibit 10.10. The Influence of Non-executive Dominated Remuneration Committees on CEO Cash Reward, with ROE.

	CEO Total Cash ^a	CEO Incentive Cash ^a	CEO Non-incentive Cash ^a
Board Governance Measure:			
Remuneration Committee _{t-1} ^c	-0.013 (0.051)	-0.024 (0.073)	0.032 (0.071)
Remuneration Committee _{t-1} *ROE _{t-1}	-0.001 (0.001)	-0.001 (0.002)	-0.001 (0.002)
Controls:			
Firm Risk _t	0.053 (0.122)	-0.057 (0.166)	0.177 (0.157)
Size _{t-1} ^a	0.088** (0.032)	0.038 (0.041)	0.149*** (0.044)
Incoming CEO _t ^c	-0.202*** (0.027)	-0.043 (0.033)	-0.260*** (0.034)
Outgoing CEO _t ^c	0.050 (0.032)	-0.081** (0.032)	0.063 (0.041)
CEO Total Cash _{t-1} ^a	0.738*** (0.077)		
CEO Annual Incentive Cash _{t-1} ^a		0.892*** (0.059)	
CEO Total Non-incentive Cash _{t-1} ^a			0.545*** (0.111)
ROE _t ^b	-0.001 (0.000)	0.000 (0.001)	0.000 (0.000)
ROE _{t-1} ^b	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)
Constant	1.838** (0.715)	0.621 (0.772)	2.978** (1.001)
Observations	2838	2838	2838
Hansen Test of Overidentification	$\chi^2=85.67$	$\chi^2=95.58$	$\chi^2=94.76$

a Natural Logarithm

b Percentage

c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors in parenthesis

Non-executive Director Dominated Nomination Committees

Exhibit 10.11 presents the estimated coefficients testing the moderating effects of having a non-executive director dominated nomination committee (indexed by the presence of a non-executive director majority) on the relationship between three measures of CEO cash reward, and real returns:

It was predicted (Hypothesis 10.5b, d, and f) that having a non-executive director dominated, nomination committee would enable the board to more effectively manage the relationship between CEO cash rewards and performance given that such committees are concerned primarily with maximizing overall board effectiveness and task performance in relation to director and top executive selection. However, as the results in Exhibit 10.11 show, CEOs belonging to firms with non-executive-dominated nomination committees do not receive significantly different levels of total cash, annual incentive cash, or total non-incentive cash reward, to those CEOs belonging to firms without such committees. Further, the presence of such a committee makes no significant difference to the sensitivity of cash reward to lagged real returns. Accordingly, none of the hypotheses relating to predicted nomination committee effects are supported.

Exhibit 10.12 presents the estimated coefficients for CEO cash reward, ROE, and non-executive dominated nomination committees. Again, against predictions (Hypotheses 10.5 b,d,f) having a non-executive nomination committee does not positively moderate the relationship between any of the CEO total cash and annual incentive cash reward, and ROE. Against expectations (Hypotheses 10.5f), however, CEOs in companies with such nomination committees receive significantly greater levels of total non-incentive cash reward than otherwise ($\beta=0.134, p < 0.05$).

Exhibit 10.11 The Influence of Non-executive Dominated Nomination Committees on CEO Cash Reward, with Real Annual Stock Returns.

	CEO Total Cash ^a	CEO Incentive Cash ^a	CEO Non-incentive Cash ^a
Board Governance Measure:			
Nomination Committee _{t-1} ^c	0.002 (0.035)	0.059 (0.044)	0.060 (0.039)
Nomination Committee _{t-1} *Real Returns _{t-1}	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Controls:			
Firm Risk _t	-0.042 (0.102)	-0.145 (0.164)	-0.060 (0.134)
Size _{t-1} ^a	0.059** (0.018)	0.019 (0.023)	0.096*** (0.030)
Incoming CEO _t ^c	-0.195** (0.025)	-0.016 (0.026)	-0.238*** (0.036)
Outgoing CEO _t ^c	0.028 (0.028)	-0.018 (0.027)	0.053 (0.037)
CEO Total Cash _{t-1} ^a	0.787*** (0.069)		
CEO Annual Incentive Cash _{t-1} ^a		0.874*** (0.049)	
CEO Total Non-incentive Cash _{t-1} ^a			0.627*** (0.087)
Real Returns _t ^b	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)
Real Returns _{t-1} ^b	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Constant	1.772** (0.718)	1.161 (0.605)	3.036*** (0.813)
Observation	2954	2954	2954
Hansen Test of Overidentification	$\chi^2=118.12$	$\chi^2=130.44$	$\chi^2=148.94$

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard errors in parenthesis

Exhibit 10.12 The Influence of Non-executive Dominated Nomination Committees on CEO Cash Reward, with ROE.

	CEO Total Cash ^a	CEO Annual Incentive Cash ^a	CEO Total Non-Incentive Cash ^a
Board Governance Measure:			
Nomination Committee _{t-1} ^c	-0.008 (0.045)	-0.071 (0.071)	0.134* (0.058)
Nomination Committee _{t-1} *ROE _{t-1}	0.000 (0.001)	0.000 (0.002)	-0.001 (0.001)
Controls:			
Firm Risk _t	0.012 (0.123)	-0.012 (0.176)	0.273 (0.148)
Size _{t-1} ^a	0.072* (0.037)	0.061 (0.039)	0.158*** (0.036)
Incoming CEO _t ^c	-0.230*** (0.028)	-0.043 (0.030)	-0.269*** (0.034)
Outgoing CEO _t ^c	0.048 (0.032)	-0.062* (0.032)	0.063 (0.039)
CEO Total Cash _{t-1} ^a	0.798*** (0.094)		
CEO Annual Incentive Cash _{t-1} ^a		0.907*** (0.060)	
CEO Total Non-incentive Cash _{t-1} ^a			0.463*** (0.099)
ROE _t ^b	-0.001 (0.000)	-0.001 (0.001)	0.000 (0.001)
ROE _{t-1} ^b	-0.001 (0.001)	-0.001 (0.001)	0.000 (0.001)
Constant	1.373 (0.780)	0.021 (0.658)	3.766*** (0.986)
Observation	2838	2838	2838
Hansen Test of Overidentification	$\chi^2=89.04$	$\chi^2=91.62$	$\chi^2=103.96$

^a Natural Logarithm

^b Percentage

^c Binary Variable

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Robust Standard Errors in parenthesis

Auxiliary analysis examined the incremental explanatory leverage provided by pooling all five governance measures in order to ascertain whether the influence of these factors might be combinative rather than individual; that is whether pooling explanatory variables would explain variation in CEO cash reward measures above and beyond their simple effects.

On the basis of existing research and theory, it is postulated in Chapter Four that boards might make tradeoffs among and between primary and secondary alignment mechanisms. For example, boards may make a trade-off between executive ownership and levels of incentive CEO cash (see Chapter Eight). The same logic may apply among secondary alignment mechanisms. For instance, boards with a nomination committee may consider a remuneration committee superfluous. Conversely, boards might seek to minimise the possibility of executive entrenchment by implementing the principle of independence holistically, such that the combined effects of having a non-executive chair, a non-executive dominated board, non-executive-dominated committees, and mandatory director shareholding may be exponentially greater than would otherwise be the case.

A linear test can be useful for testing whether variables have greater explanatory power when combined (see Wooldridge, 2000). This point will be revisited shortly. To test this supposition, all five governance measures were pooled together to see if this increased the incremental explanatory power of the model, and to examine the relative explanatory power of non-executive director ownership. The estimation approach used has critical implications for inferences. It is important to control for possible additive and substitutive relationships among all variables when estimating an econometric model, even if this requires a system of equations to account for these considerations; not accounting for these problems limits the extent of legitimate causal inference.

A pooled model was tested in order to control for complex relationships among the five key governance variables and to ascertain whether their effects are additive. The value of this methodology is that it controls for the possibility of there being tradeoffs between different secondary alignment mechanisms. However, the results from a joint significance test ($F_{(10,509)}=0.36, p=0.964$) suggests that pooling the main and interaction effects of all the key explanatory governance variables does not add incremental explanatory power to the model. A non-significant F statistic indicates that pooling the governance variables does not increase the explanatory power of the model (see Wooldridge, 2002). This also suggests that there is little reason to suspect that the additive impact of the governance variables is greater than modelling these variables in separate equations.²⁸ For this reason, the results reported in this chapter are for separate regressions for each of the key explanatory variables.

²⁸ In the current chapter, zero-order effects do not furnish preliminary support for tradeoffs among board governance measures, nor do Chow test results support the possibility that modelling the additive effects of

Controlling for the possibility of ownership influencing the hypothesised main and interaction effects, subsidiary analyses included ownership concentration among the top shareholder as a control variable, in addition to its interaction with performance. This was undertaken on the premise that there may be tradeoffs or an additive, or perhaps spurious relationship, between board governance and external ownership when it comes to board decision-making on CEO reward and performance. However, the inclusion of these measures again did not change the coefficients substantially to warrant their inclusion as controls in the model. The joint significance test results indicate that pooling all the governance measures, along with ownership concentration measure, did not add incremental power to the model.

10.5 Discussion

There is no doubt that 'best practice' governance prescriptions have assumed greater prominence in Australian listed company board governance practice since the late 1990s. The ASX Corporate Governance Council's 'Principles of Good Governance and Best Practice Recommendations', and OECD Corporate Governance principles, in tandem, encouraged board structural independence at the committee and board level. Recent corporate governance regulation encourages boards to, among other things, have a higher proportion of independent directors, appoint independent chairpersons, and establish arms-length remuneration committees and nomination committees. More rigorous disclosure requirements in recent times also pressure boards to make CEO rewards more performance contingent.

The descriptive evidence reported in this chapter indicates a growing trend towards greater use of board governance practices conducive to greater director independence in outlook and decision-making. However, this chapter also set out to test whether corporate governance codes of best practice encouraging independence at the board and committee level, as well as task-specific committees such as remuneration and nomination committees, have actually enabled boards to more effectively manage CEO reward and performance.

board governance measures provides the model with greater explanatory power. It is for this reason that the ensuing discussion and analysis is based on results from separate regressions for each board governance measure.

The findings presented in this chapter make a unique contribution to knowledge by interrogating whether board governance practices, informed by the ideal of director ‘independence’, are necessarily valid and reliable predictors of board task performance, specifically in the area of CEO reward and performance management. Have such reforms actually improved the board’s effectiveness in managing CEO reward and performance? What impacts have increased board structural independence and more rigorous executive reward disclosure requirements had on the level and composition of CEO cash rewards? Have these reforms had any material effects on the performance-contingency of CEO cash reward?

The results in this chapter furnish little support for the aforementioned propositions. The most striking results to emerge from the data is that board governance practices purported to enhance the board ability to make strategic choices and independent judgments are not significantly associated with CEO cash reward or with either market or accounting measures of reward-performance sensitivity. Results also reveal that non-executive director shareholders are no more effective at managing the relationship between CEO reward and performance than are their executive counterparts. On the basis of the results presented in this chapter, it does not appear that board structural characteristics significantly enhance the board’s decisional capabilities in regard to the management of CEO cash reward and performance.

It was predicted that good board governance practices would significantly moderate or strengthen the association between CEO cash rewards and performance. However, such practices have been ineffectual in improving the board’s effectiveness to structure more optimal and performance-sensitive CEO cash rewards. If we revisit the results reported in Chapter Six two key findings emerge. First, the ratio of incentive cash to total CEO incentive cash has not increased over time; rather, there has been an increasing trend in all CEO cash reward components, in addition to equity-based CEO rewards. The inferential results presented in Chapter Six also show that reported CEO performance-sensitive cash rewards are *insensitive* to both market-return and accounting-return firm-level performance measures, reportedly used by the board to determine performance-based reward and CEO incentive plans. At least with respect to cash reward, the increasing trend in the practice of board independence has not translated into a greater relative emphasis on performance contingent cash reward. Boards that embody the principles of ‘independence’ and ‘best practice

corporate governance' are no more effective at managing the relationship between CEO total cash reward and performance than are boards that do not.

These results also seem consistent with research implicitly questioning the efficacy of independence at the board and committee level as a mechanism to improve board task performance. A survey- and interview-based study by Lawler and Finegold (2007) of 768 United States company directors indicates that non-executive directors experienced acute role conflict in having to simultaneously serve the interested of shareholders while maintaining camaraderie on the board. The same directors report that non-executive directors who are members of a remuneration committee feel compelled to appease the CEO. These findings, along with the findings presented in the current chapter and in the empirical literature (see Westphal, 1998; Bebchuk and Fried, 2004), raise questions regarding the overall efficacy of board independence as an indicator of board effectiveness. Moreover, the results presented are consistent with research showing that board and remuneration committee composition are not systematically related to CEO reward (Dalton, *et al.*, 1998). In general, the evidence presented in this chapter supports the notion that independence is not a criterion-valid predictor of board task performance in the domain of CEO reward and performance management, nor does it positively moderate the relationship between CEO rewards and performance.

One possible explanation for these findings is that the impetus to increase board structural independence has been driven by tokenism – by notional compliance rather than genuine commitment to principle. Bebchuk and Fried's (2004) provocative concept of reward 'camouflage' may be salient here, especially in highlighting the possibility that boards may seek to placate shareholders and negate shareholder outrage by manipulating reward reporting to obscure executive rent extraction. For example, it is evident from the findings reported in Chapter Six that boards are reporting that CEO cash rewards are performance contingent even though in reality this does not appear to be so. In this sense, professions of board independence and the reported embrace of incentive reward may be little more than instances of 'mimetic isomorphism' as Bender (2004) describes – taken-for-granted 'reforms' that have served to negate shareholder outrage through the guise of agency theory based board-principal alignment mechanisms. This logic may also explain the unexpected positive association between the level of non-incentive cash reward and the presence of a non-executive dominated nomination committee. Although a counter-argument here might be that

higher levels of non-incentive cash reward could be considered by the remuneration committee to be important to providing longer term performance and retention incentives.

It is doubtful that the five measures of good governance tested here do enhance the board's ability to 'remunerate fairly and responsibly' or 'encourage enhanced performance' as purported by the ASX Corporate Governance Council (2003). Our findings indicate that non-executive dominated/independent-dominated chairs, boards and committees have not, to date, been instrumental in precipitating a greater alignment between CEO rewards and corporate performance, at least in the Australian context.

In sum, the results show that conflating independence with board effectiveness in managing the principal-agent relationship is both conceptually problematic and fraught with policy dangers. We will resume this discussion in the following chapter.

10.6 Conclusion

This study is the first Australian study of its kind to rigorously test one of the key principles informing corporate governance codes of best practice, namely that board structural independence is a necessary means to board effectiveness. According to the normative model of corporate governance embedded in Australian corporate governance regulation and codes, the greater the proportion of independent/non-executive directors at chair, board and committee levels, the lower the likelihood of board capture and complicity and the greater the prospect of directors being diligent and effective monitors and managers of executive behaviour, contribution and reward.

This chapter's primary objective is to test the validity of these assumptions using four measures of board structural independence, as well as Agency Theory derived measure of director-owner material alignment in the form of the incidence of director equity ownership in the firm. However, the results show that practices that are purported to enhance the board's effectiveness to design CEO rewards and to optimise the linkage between rewards and performance, are not achieving their intended effects, nor are they negative predictors of total levels of CEO cash reward. Further, the results furnish no support for the proposition that greater director independence (indexed by the presence of non-executive directors) positively moderates the relationship between cash reward and lagged market and accounting performance.

Taken together, the results that are presented in the current and foregoing chapters show that board structural independence is not, in itself, a valid measure of board effectiveness with respect to the management of CEO reward and performance. Australian listed companies subscribing to the tenets of best practice board governance are no more effective in managing the relationship between CEO cash reward and performance than are those firms that do not demonstrate a high level of board structural independence.

In essence, it appears from the results presented here that the principle and promise of board structural independence is, to use the vernacular, 'too good to be true'. At the very least, it is appropriate to suggest that in relation to the role of the board in the principal-agent relationship, the tenets of 'good' board governance will only be verified when the practices prescribed can be proven to have enhanced the board's effectiveness in managing executive reward levels, composition, and performance-sensitivity.

Chapter Eleven

General Conclusion

11.1 Introduction

As the title of this thesis suggests, this study investigates the performance sensitivity of CEO cash reward in Australian public companies over the period 1999 to 2006. The results of this study suggest that CEOs in Australian public companies have enjoyed performance insensitive total cash reward. Even more surprising is the finding that CEO reported performance-based cash reward is insensitive to a range of accounting and market-based performance measures purportedly used by boards to determine CEO reward.

This thesis also set out to examine the extent to which firm, ownership, and board structural characteristics explain variation in CEO cash reward, using a system GMM approach to estimation. Moreover, it set out to empirically test and critically evaluate various structural and economic determinants of CEO cash reward determination identified in extant theory and research. One of the most compelling findings to emerge from the study is that the various corporate governance structures and practices identified by both Agency Theory and Managerial Power Theory as solutions to CEO reward excess and pay without performance do not appear to influence, nor moderate, these outcomes. These findings suggest that the theoretical and applied 'best practice' focus on board structural characteristics as the preferred means of improving the board's management of CEO reward and performance is largely misplaced.

The clearest empirical findings to emerge from this study are that firm size and external ownership concentration do have a significant influence CEO cash reward determination. Another very important and compelling finding to emerge from this study is that the entrenched approach to model specification and parameter estimation in extant empirical research limits the extent to which legitimate causal inferences can be drawn. This study shows that a system GMM approach to estimation is more efficient in terms of reducing methodological bias and accounting for the complex error structure of a dynamic panel model.

This final chapter revisits the central theoretical and methodological problems that the present study has been designed to address. After re-examining the study's conceptual core, this

chapter assesses the study's major empirical findings in relation to the research propositions raised in Chapter Four, and extant theory. The chapter then explores the significance and implications of the study's findings for corporate governance prescriptions and practice. Finally, discussion turns to empirical limitations and areas for further inquiry.

11.2 Reprising Research Purpose and Approach

We know from research that CEO total reward, both locally and abroad, continues to increase despite bearing at best a seemingly weak relationship to measures of firm-level performance. The only conclusive finding to emerge from the extant research on CEO reward determination is that firm size matters in terms of being a robust positive predictor of CEO total reward level.

We also know that theory and corporate governance regulation considers CEO reward-for-performance to be a definitive measure of the board's efficacy to manage CEO reward and performance. Best practice corporate governance prescriptions have placed greater pressure on boards to make CEO reward more performance-contingent. We also know that media outrage over allegedly excessive CEO reward packages continues unabated. Nevertheless, we know surprisingly little about why CEO total reward still bears such a seemingly weak relationship to measures of firm level performance.

The review in Chapter Two of the extant theoretical treatment of the relationship between CEO reward and performance identifies three primary shortcomings in approaches to date. The first of these is that both Agency Theory and the Managerial Power perspective do not explicate the decision-making processes underpinning the CEO reward and performance relationship. Neither Agency Theory nor the Managerial Power approaches are, in themselves, adequate to the task of explaining the internal and external complexities of executive reward determination. The second shortcoming of extant theory is that the distinctions between Agency Theory and the Managerial Power perspective have been overstated. Under the right conditions, boards are assumed to manage the performance contingency of CEO reward efficaciously and at arm's length. Both perspectives proffer institutional explanations for the attenuation of the relationship between CEO reward and performance, by attributing CEO reward without performance to poor board governance and structural arrangements. Structural arrangements, such as having a non-executive dominated

board and committees and having a non-executive chair, are purported to improve the board's ability to manage CEO reward and performance in an economically rational way.

Chapter Three highlights two primary shortcomings of the extant empirical research examining the relationship between CEO reward and performance. The first of these shortcomings is that very little rigorous longitudinal research has been undertaken in the Australian context to explain the variation in the relationship between CEO cash reward and firm performance. Further, recent changes to corporate governance regulation require that attention be paid not only to the reward-performance relationship *per se*, but also to the possibility that regulatory change may have altered this relationship. The second shortcoming concerns the preference in both local and international studies for using a fixed effects approach to parameter estimation, in addition to the specification of a single and static equation model to investigate CEO reward for performance. Chapter Five provides a detailed examination of these issues and argues that prevailing approaches to model specification and parameter estimation limit the inferential validity of conclusions drawn. It argues that the widely-cited Jensen and Murphy (1990) statistic does not consider the dynamism inherent in the CEO reward and performance management process, and thus makes no allowance for the complex error structure of a dynamic panel data model (see Sayrs, 1989 for a general discussion). Based on these considerations, Chapter Five suggests that the sensitivities between executive reward and firm-level performance reported in existing empirical studies may be methodologically driven, and reflect a flawed approach to parameter estimation and model specification. While an instrumental variables (IV) approach goes some way towards ameliorating the problems associated with the commonly used fixed effects approach – most notably endogeneity - it too suffers from other sources of contamination, such as autoregressive processes arising from having a lagged explanatory variable. In addition to these shortcomings, while research has examined the determinants of CEO reward and performance, the implications of these findings have not been analysed from a board decisional or board capability perspective.

The present study was designed to address these aforementioned methodological and theoretical shortcomings as a way to develop our current understanding of the management of CEO reward and performance. The approach taken in this study makes an important theoretical, empirical, and methodological contribution to the extant body of literature by examining CEO reward and performance in four main respects.

Firstly, it represents the first study to comprehensively examine a range of structural and economic factors posited to influence the CEO reward and performance relationship using a system GMM approach to dynamic panel analysis. These factors include firm size, firm risk, CEO share ownership, CEO participation in a stock option and/or share rights plan, and external share ownership concentration. It also considers a range of board structural arrangements purported to enhance the performance-contingency of CEO reward.

Secondly, this is the first study of its kind in Australia to test whether board structural arrangements necessarily enhance the board's management of the relationship between CEO cash reward and performance.

Finally, the study is the first to highlight the inadequacies of existing approaches to parameter estimation and econometric model specification in this area of enquiry, as well as demonstrate the benefits of using an identified multiple equation approach, such as a system GMM approach, to the dynamic panel analysis of CEO cash reward and performance.

11.3 Key Findings

Chapter Six opens the empirical discussion by reporting a preliminary examination of the relationship between CEO cash rewards and various measures of firm-level performance, whilst co-varying out the effects of the contextual variables specified in the preferred model, such as firm size, firm risk, external ownership concentration, and CEO share ownership. The results reveal a disassociation between CEO total cash reward and firm-level performance. This disassociation was apparent even though a range of firm-level performance measures were modelled separately, as well as pooled together to capture any additive or substitutive effects. The most revealing finding to emerge here is that reported performance-based cash reward is insensitive to various measures of firm-level performance. A number of explanations were offered as tentative or speculative explanations for this counter-intuitive finding.

Chapter Six also makes an important methodological contribution to research examining the relationship between CEO reward and performance. Specification tests demonstrate the inadequacy of using a fixed approach to parameter estimation: More specifically, there appear to be systematic differences in estimates across fixed effects, IV, and system GMM approaches. These inconsistencies may be explained in terms of endogeneity biasing estimates

in fixed effects and IV approaches. For this reason, a system GMM approach was applied to estimate specific causal relationships in the proposed theoretical model in subsequent chapters.

Chapter Seven examines whether firm risk and firm size influence CEO cash reward determination. The results suggest that size and risk do not positively moderate board decisions regarding alignment of cash rewards with firm-level performance.

Chapter Eight explores the influence of two forms of CEO equity participation – the proportion of stock held by the CEO and CEO participation in stock option and/or share rights plans – on the relationship between CEO cash reward measures and firm-level performance. The results show that CEO stock ownership and CEO participation in stock options/rights rights plan does not positively moderate the relationship between CEO total cash reward and firm performance. Against expectations, neither measure significantly explained variation in the level of CEO total cash reward, nor the level of CEO annual incentive cash.

Chapter Nine examines the main effects of external ownership concentration on CEO cash reward levels, as well as its moderating effects on the relationship between CEO cash reward levels and measures of firm performance. The results suggest that external ownership concentration is an important basis for board decisions regarding the level of CEO cash reward. Results reveal an inverse relationship between ownership concentration among top 20 shareholders and the level of CEO total cash reward. Consistent with predictions, the percentage of stock owned by the top shareholder positively moderated - that is, significantly strengthened - the relationship between CEO total cash reward and firm performance.

Chapter Ten examined whether board governance practices and structures influence CEO cash reward determination in ways purported by recent corporate governance codes of best practice. One of the most intriguing findings presented in this thesis, especially in the context of prevailing best practice assumptions regarding the desirability of board structural independence, is that key prescriptions for good board governance practice - prescriptions purported to enhance the board's ability to, *inter alia*, manage the relationship between CEO reward and performance - have no significant moderating effect of CEO cash reward and performance. Such results highlight the deficiencies of conceptualising board structural

characteristics and, in particular, board structural independence, as valid and 'reliable predictors on the board's effectiveness in managing CEO cash reward and performance.

We will now relate these findings more closely to the study's initial research propositions.

11.4 Empirical, Theoretical, and Practical Significance

Chapter Four presents research and theory-based propositions regarding the effects of firm, ownership, and board characteristics, on CEO cash reward determination. These propositions are also used to formulate and test specific hypotheses in subsequent chapters. We will now re-examine these propositions in light of the study's empirical findings and in so doing discuss the empirical, theoretical, and practical implications of this thesis.

11.4.1 Firm Characteristics and CEO Cash Determination

Firm Performance

Consistent with Agency Theory, this study recognises that CEO cash reward is not used exclusively as performance incentive mechanism; rather it may be used variously to attract, retain, and/or motivate talented CEOs. Thus:

Proposition 1: While CEO reported CEO cash rewards may be sensitive to firm performance it is unlikely to be exclusively contingent on firm performance.

Consistent with this line of logic, and the discussion in Chapter Seven, it is reasonable to expect CEO cash reward to be exclusively performance-based, especially considering that CEO cash reward also serves as a mechanism to manage CEO risk bearing. Nevertheless, we would expect, at the very least, the level of CEO performance-based cash rewards to be sensitivity to some measure of firm-level performance. In terms of the cash reward measures operationalised in this study, it is reasonable to expect that CEO total cash reward to be sensitive to, *ceteris paribus*, performance. We would also have a stronger expectation that the purely performance-based component of cash reward to be performance-based and variable from year to year. Therefore:

Proposition 2a: CEO total cash reward is positively associated with lagged and/or contemporaneous accounting and/or market return performance

Proposition 2b: CEO annual cash reward is positively associated with lagged and/or contemporaneous accounting and/or market return performance

Chapter Six set out to test these propositions. According to the results presented, this study does not lend support for Propositions 1, 2a, and 2b.

This may also explain why, after controlling for firm size, CEO cash reward is still significantly associated with CEO cash reward in the year prior, even though we would expect the reported-performance contingent component of cash reward to be more variable. The empirical findings presented in Chapter Six thus lend no support to proposition 1; nor do they support a systematic relationship between reported performance-contingent cash reward and measures of firm level performance posited in proposition 2a and 2b. Indeed, auxiliary analyses suggest that CEOs in firms with negative returns in the prior year do not receive significantly lower levels of total cash or performance-based cash rewards. This also suggests that *ex post* settling up by the board remains an Agency Theory ideal rather than established practice.

To investigate whether these results were methodological artefacts, the researcher operationalised firm performance in various ways. Based on Lambert and Larcker's (1987) insights, it is reasonable to expect CEO cash reward to be sensitive to either accounting-return or market-return performance. However, the results indicate that Australian boards do not configure CEO cash reward levels in line with lagged firm-level performance. This is despite a recent study by Merhebi *et al.* (2006), which used fixed effects estimates, suggests otherwise. The component of CEO total cash reward that is reported as being performance-contingent is found to be insensitive to a gamut of firm-level performance measures. As alluded to earlier, it is reasonable to expect the reported performance-based component of CEO cash reward to be variable from year to year, even though we would expect total cash reward, given CEO risk aversion, to be sensitive to total reward in the year prior. However, as reported in Chapter Six, performance-contingent cash reward is strongly associated with performance-based cash reward in the year prior. This finding is inconsistent with extant theory. There may be two explanations for this unexpected and counter-intuitive finding. First, Australian boards may not use the reported-performance cash reward exclusively as a performance incentive mechanism. Rather, it may also be used to manage and compensate CEO risk exposure. A second explanation is that the researcher may have miss-specified the

performance vector. It may be the case that corporate performance is not used as a basis on which to determine CEO cash reward. Auxiliary analyses also reveals that alternative firm-level performance measures are insensitive to CEO cash reward. Therefore it remains unclear what measures Australian boards use to determine CEO cash reward. What is clear, however, is that boards do not base CEO cash reward decisions purely, or even primarily, on an evaluation of prior accounting and market-return firm-level performance. These findings call into question whether the reward decisions made by Australian boards are wholly rational and positivistic in nature.

There are other possible explanations for the lack of sensitivity between CEO cash reward and performance that were investigated as part of preliminary and auxiliary analysis. The first of these is that Australian stock market condition in the time period covered varied such the stock market was both bullish and bearish. Therefore, consistent with Agency Theory postulates regarding CEO risk management, it is reasonable to expect that these variegated market conditions may have moderated CEO reward-performance sensitivity in such a way that the relationship is weaker when conditions are bearish and stronger when they are bullish (See Aggarwal and Samwick, 1999a; Mishra *et al.*, 2000). Put another way, it may be that CEO cash incentives are 'sticky downwards'. Given that over the studied period the market was both bullish and bearish, it is reasonable to expect pooling to dilute sensitivity. However, to account for this in all model specifications, year dummies were operationalised to co-vary out time effects.

These possible explanations were also investigated through two other means. The first, the main and moderating effect of total firm risk measure were examined. The results suggest that total risk, including firm systematic risk, is a negative determinant of CEO cash reward, but not a significant moderator of CEO cash reward-performance sensitivity. These results do not lend full support to Agency Theory postulates that risk negatively moderates CEO reward-performance sensitivity, and are inconsistent with previous empirical research (Aggarwal and Samwick, 1999a; Merhebi *et al.*, 2006; Mishra *et al.*, 2000). Finally, a dummy variable for firms with negative returns over the period was modelled to investigate whether CEO cash reward is asymmetrically sensitive to performance. The results were non-significant, suggesting that CEO cash reward over the period is not asymmetrically sensitive to performance.

Another explanation for the findings presented in Chapter Six is that CEO-specific characteristics – for example age, experience, and functional background – may explain the lack of CEO reward-performance sensitivity. To investigate the impacts of these human capital explanations outlined in Chapters Two and Three, various unreported preliminary analyses were conducted. None of these analyses provide compelling support for human capital explanations for reward without performance. First, CEO unobserved fixed-effects were accounted for using CEO dummy variables. With or without these variables, estimates remained qualitatively unchanged. Finally, it investigates the influences a number of other CEO characteristics on CEO cash reward; these include whether the CEO was the founder of the company, and also whether they were internally or externally appointed. The results are statistically non-significant and inconsistent with previous research (for examples see Decktop, 1988; Finkelstein and Hambrick, 1989; Gomez-Mejia and Wiseman, 1997; Lilling, 2006; Lippert and Porter, 1997).

Firm Size & Risk

While the empirical findings are discordant with Propositions 1, 2a, and 2b, they suggest that boards do base their decisions in part on firm size and firm risk. Chapter Seven examines the influence of economic and firm characteristics on CEO cash reward, and the following proposition:

Proposition 3: Firm size is positively associated with CEO total cash, and annual incentive cash reward.

Proposition 4a: Firm risk is positively associated with CEO total cash reward.

Proposition 4b: Firm risk is negatively associated with CEO annual incentive cash reward.

Using an identified system GMM estimator, it is found that both firm size and firm risk are positive predictors of both CEO total cash reward and the level of CEO annual incentive cash. These findings lend support to propositions 3 and 4a. Contrary to proposition 4b, firm risk does not significantly influence CEO annual incentive cash reward, even though extant theory would predict otherwise. As suggested above, it may be that these findings are attributable to the possibility that annual incentive reward is not exclusively a performance incentive and thus risk transfer mechanism.

It can be inferred from these findings that firm size and firm risk are important foci in board deliberations pertaining to CEO total cash reward. In line with expectations, the results imply that the larger the firm, and the greater the variance in firm stock returns, the more cash reward CEOs receive. Surprisingly however, firm size and firm risk do not appear to significantly moderate the relationship between CEO cash reward and performance. The extant literature offers an explanation that board's may consider firm risk and firm size proxies of CEO risk exposure and, in an effort to manage CEO risk exposure, provide greater levels of fixed cash reward. Assuming that board regard both firm size and firm risk to be indices of CEO risk bearing, on the basis of these results, it is appropriate to suggest that, as far as cash rewards are concerned, Australian boards may be better at managing rewards for retention purposes than for rewarding prior performance.

11.4.2 Ownership Characteristics and CEO Cash Determination

CEO Ownership

Chapter Eight investigates the influence of CEO stock ownership on CEO cash reward determination, and tests the empirical validity of the following propositions:

Proposition 5a: The percentage of issued capital held by the CEO is associated with CEO total cash and annual incentive cash reward.

Proposition 5b: CEO participation in a stock option and/or share rights plan is associated with CEO total cash and annual incentive cash reward.

While Lambert and Larcker (1987) posit that CEO share ownership influences the board's appraisal of CEO performance - and hence the determination of CEO reward - the findings of this study lend no support to this line of logic. Indeed, the results indicate that CEO share ownership, and/or stock option and share rights plan participation, do not significantly determine, nor moderate, the relationship between CEO cash reward and performance. On this basis, the current study does not furnish support for propositions 5a or 5b.

These findings contradict the suggestion frequently made in the literature that boards make tradeoffs between cash and equity-based incentives (Lambert and Larcker, 1987), especially when CEO reported performance-based cash rewards are found to be insensitive to both market and accounting performance measures. The performance insensitivity of performance-

based rewards perhaps explains why these measures did not exert a significant influence on CEO cash reward in ways predicted. It may also be the case that CEO share ownership, and share option/share rights participation, are not important foci of board decisions because cash reward may not be seen by the board as a legitimate source of risk transfer.

External Ownership

Chapter Nine examines the extent to which ownership concentration explains variation in CEO cash reward, and tests the following:

Proposition 6a: The percentage of issued capital held by top shareholders is negatively associated with CEO total cash reward.

Proposition 6b: The percentage of issued capital held by top shareholders is positively associated with CEO annual incentive cash reward.

The results in Chapter Nine indicate that, besides being sensitive to firm risk and firm size, the percentage of company stock owned by the top shareholder, and also the proportion of equity owned by the top 20 shareholders, influences CEO cash reward. The results lend support to proposition 6a, but not to proposition 6b. Ownership concentration negatively predicts both CEO total cash and annual incentive cash reward. According to the estimated coefficients, CEOs in companies with a higher concentration of ownership among top shareholders, receive significantly lower levels of total cash and annual incentive cash reward. The results indicate that the percentage of stock held by the top shareholder, whether they be a large private block holder or an institutional investor, positively moderates the alignment of CEO cash reward and market-return performance; that is, the performance-contingency of cash reward received by the CEO is significantly greater in companies with large external block holders. This highlights the potential benefits of having large block holder representatives on the board. These findings, along with the findings regarding firm risk and firm size, are consistent with the hypothesised model presented in Chapter Four which suggest that external ownership, firm risk, and firm size are all important determinants of CEO cash reward.

11.4.3 Board Characteristics and CEO Cash Determination

The dominant approach in both governance theory and practice is to cast board structural characteristics as critical intervening variables in the board's effectiveness to procure executive performance incentives and concomitant awards.

Both Agency Theory and Managerial Power Theory assume that under the right conditions, boards have the capabilities to achieve optimal contracting by means of rational decision-making. The Managerial Power approach contends that structural and situational characteristics influence the relative power of the board and the CEO in ways that limit the board's ability to make rational and strategic choices in the design and determination of CEO cash rewards. In keeping with these assumptions, Chapter Ten tests the following propositions:

Proposition 7a: Board 'independence' at the board chair, board, and committee level is negatively associated with CEO total cash reward.

Proposition 7b: Board 'independence' at the board chair, board, and committee level is negatively associated with CEO total cash reward.

Proposition 8a: The presence of a non-executive dominated remuneration or a nomination committee is negatively associated with CEO total cash reward.

Proposition 8a: The presence of a non-executive dominated remuneration or a nomination committee is negatively associated with CEO annual incentive cash reward.

However, the results do not necessarily, nor exclusively, validate the Managerial Power notion that CEO cash reward without performance reflects the board's socio-political orientation to the decision-making process. These findings thus do not support propositions 7a, 7b, 8a, 8b.

Chapter Ten reports results that suggest that non-executive dominated boards, committees and chairs are no more efficient in managing the relationship between CEO cash reward and firm level performance than are boards that do not subscribe to the principles of independence. Such findings suggest that there is merit in interrogating the postulates and prescriptions of

both Agency Theory and Managerial Power Theory. The results caution us against viewing 'independence' as a valid signifier of board competence and board effectiveness. The findings demonstrate that board governance best practice is not necessarily a remedy to CEO entrenchment or board capture. Nor do these practices, individually, or in combination, necessarily improve the board capabilities to optimise CEO reward and performance. On the basis of these findings it seems fair to suggest that corporate governance 'best practice' prescriptions can only be deemed 'best practice' when they are shown to materially improve board task performance.

These findings carry important implications for governance theory and regulatory practice. As noted throughout this study, both Agency Theory and the Managerial Power perspective assume that CEO reward without performance can be explained in terms of deficient structural arrangements on the board. However there is no intuitive reason to expect that board independence – nor board structural characteristics more broadly – will enable the board to manage and control CEO cash reward and performance, on the basis of objective judgments and strategic choices, especially in view of the forgoing propositions. In other words, boards that practice 'independence' at the committee, board, and chair level are not less prone to making unreliable and invalid performance appraisals and reward decisions. The results reported in this thesis lend credence to the suggestion that Board 'independence' at the chair, full board and committee level may not be a valid indicator of board effectiveness in managing CEO reward and performance, and should not be conflated with board competence to manage and control CEO cash reward and performance on the basis on strategic choice and due diligence.

The results in Chapter Ten suggest that, contrary to prevailing theoretical and policy prescriptions, practicing board 'independence' is ineffectual in enabling boards to increase the degree of alignment between CEO reward and firm performance. These findings prompt a shift in focus in corporate governance prescriptions away from board structural characteristics. We will revisit this point shortly.

11.5 Limitations

A number of caveats need to be noted regarding the current study. As suggested in Chapter Five, reliable time-series data on the estimated annual value of CEO equity-based reward in Australian companies is not available for the period studied. However, this is not considered

to represent error in variables nor a source of contamination. CEO cash reward has been taken as a signifier of CEO total wealth rather than a direct and comprehensive measure of that wealth. Excluding the value of equity-based results does not bias the estimated parameters; it merely limits the extent to which inferences and generalisations can be made regarding CEO total reward and performance. Nonetheless, unlike most other Australian studies, which have simply ignored the growing role of equity-based reward, this study endeavours to operationalise equity-based incentives by considering reported net balance date holdings of shares, options and rights.

Another source of uncertainty in the current study is the method used for measuring external ownership concentration. It may be argued that the operationalisation of this factor was oversimplified and did not capture different types of external ownership. Hartzell and Starks, (2003) examined the specific effect of institutional ownership on CEO reward and reported a significant negative main effect (for a similar study see David *et al.*, 1998). Thus it is conceivable that different types of ownership will have differential effects on CEO reward levels and composition. This study attempts to account for dispersion and concentration of share ownership by means of two measures; that is, the proportion of equity owned by the single largest shareholder, and the proportion of equity owned by the top 20 shareholders. Such a measure however runs the risk of ignoring different types of ownership. Although, preliminary analyses in this study did control for the possibility that CEO-founders may be among a company's cadre of top shareholders.

While the measure of equity concentration focuses on the presence of large external block holders, it is quite possible that CEOs themselves may also be major equity holders. A possible avenue for future research would thus be to follow the approach used by Tevlin (1996) and include a dummy variable for whether the CEO is him/herself a major block holder.

Another weakness is that CEO entrenchment on the board was not measured directly. The study would have been more robust had it operationalised measures of CEO entrenchment *per se*, rather than the obverse; that is, purported measures of board control. However in part this is attributable to the methodology, and in part to the corporate governance regulation. It was difficult to measure CEO entrenchment when no consistent measurement and concepts exists. In the current corporate governance climate, it is more intuitive to operationalise measures of

purported board control, such as those operationalised in Chapter Ten, which are generated from best practice governance prescriptions.

Aggregate statistical analysis does not enable the researcher to examine director perceptions and attitudes toward CEO reward and performance management. This method is not conducive to ascertaining the extent of CEO entrenchment on the board or normative pressures on the board to be conciliatory to the CEO. It is difficult to gauge the extent of interpersonal influence the CEO had over the board from aggregate statistical analysis. The factors in the model in Chapter Four, which include mechanisms for board and CEO alignment, are difficult to measure directly. Nevertheless, aggregate statistical analysis serves its purpose in testing the research propositions underpinning the structural and economic model of CEO cash reward determination presented in Chapter Four. Further, case-specific research could then be used to build the model, and to generate context specific best practice.

11.6 Areas for Further Research

This thesis uses aggregate statistical analyses to examine the effects of firm, ownership, and board structural characteristics; on outcomes of CEO cash reward determination. In this regard, the role of board decisional processes underpinning CEO cash determination can only be loosely inferred. This thesis presents findings that challenge the Agency Theory and Managerial Power preoccupation with board structural characteristics as boundary conditions fair, reasonable, and performance-contingent CEO cash reward.

As Chapter Three observes, and on which Chapter Five elaborates, the approaches to both model specification and parameter estimation entrenched in the existing research are highly problematic, and conceivably limit knowledge development in the area of CEO reward and performance. Specification tests conducted for the study indicate that endogeneity may be a major source of bias in fixed effects estimates of CEO reward and performance. On this basis, it is argued that the Jensen and Murphy (1990) specification – for so long an entrenched feature of empirical modelling in the field - has weaknesses that necessarily compromise studies that replicate the approach used, not the least of these being a failure to take account of endogeneity, serial correlation, and higher-order autoregression (see Blundell and Bond, 1998, for a discussion of these potential sources of contamination when estimating dynamic panel models). This highlights the importance of using estimation approaches that are suited to dynamic panel models.

The extant theory and research tends to oscillate between the assumptions that boards either have an economic-rational orientation or a socio-political orientation to the decision-making process. Both sets of assumptions, while plausible, ignore the third possibility that directors may have the intention to make economic-rational decisions and strategic choices but lack sufficient information and capabilities to do so. Such deficiencies would necessarily compromise boards' ability to adhere to Agency Theoretic principles of optimal contracting.

These observations point to a further promising avenue for both research and theory-building on CEO reward and performance management processes, namely closer examination of the decision-making processes involved in board deliberations on senior executive reward determination. To this end, I wish to propose a preliminary behavioural model of CEO cash determination; a model that emphasises the additional explanatory potential of cognitive-behavioural factors as opposed merely to the economic and institutional factors that have thus far dominated local and international research in this field.

The proposed alternative model is detailed in Exhibit 11.1. The principal benefit of introducing this model is that it may be used to explore the *processes* through which the firm, ownership, and board characteristics studied in this thesis, can influence CEO cash determination and performance sensitivity. A more complete understanding of CEO cash reward determination requires attention to be paid to board decisional processes and capabilities. The model is purely descriptive in its specification of the board's management of CEO reward and performance. Consistent with the practical realities of CEO cash reward determination (see Ellig, 2003), boards make a number of critical decisions and choices relating to the terms and conditions of performance or incentive-based cash incentive plans. The model outlines the task specific requirements of the board in phase one. It implicitly assumes that the board deliberations at this phase also encompass the formulation of a strategy for the ongoing maintenance and implementation of these plans. After all, phase four requires the board to disclose CEO cash rewards, and the basis on which they were determined.

Exhibit 11.1 overviews a proposed process-oriented model of the board's management of CEO cash rewards and performance by encapsulating the decision-making process underlying the determination of CEO cash rewards. The model decomposes this decision-making process

into four critical task-specific phases of the board decisional process. Here it is important to note that while the model distinguishes between different phases of decision-making, it is equally plausible that decision-making between these phases may be temporally contiguous.

In the first phase, the board ratifies proposals pertaining to the composition of CEO cash rewards, and the elements of cash incentive plans. According to Ellig (2003: 508-9), the board is required to make a number of choices regarding the specification of CEO performance. It must determine the measures that will be used to evaluate CEO performance, as well as what targets will be set in relation to those chosen performance measures. Ellig (2003) suggests that boards are also required to delineate target cash awards in relation to the achievement of the performance targets specified.

In the second phase of decision-making, the board evaluates CEO performance against the plan's specified performance measures and their attendant targets in the specified performance period. It is salient to note that the board may rely on the specified incentive plan and all its elements to varying extents - a point we will revisit shortly.

In the third phase, the board may revise fixed cash rewards, and determine the performance-based cash rewards to be awarded to the incumbent CEO.

In the fourth and final phase the board disclose their cash reward decisions and the fashion in which their deliberations amounted to these outcomes.

The model suggests that not only is CEO cash rewards an outcome of board decision-making process, but also that board decisions may be moderated by a multitude of factors. Firm-specific factors such as the variance of firm performance and size, external ownership, corporate governance regulation, and CEO ownership and risk preferences, are potentially foci of board deliberations at each task-specific phase. As suggested, the Board may selectively attend to, and place differential importance on, these factors in their deliberations at each phase.

Both are also posed as a means of reframing current theorising and research on the nature and implications of corporate governance practices and processes – particularly in relation to the determination of executive reward. The board decisional model poses naïve assumptions

about effectiveness of boards to manage CEO reward and performance given the socio-political context of this process. Rather than being taken as a direct indicator of board effectiveness, board structural independence is cast as an important moderating construct in the integrative model introduced.

According to the model, rather than being important foci of board deliberations pertaining to CEO cash reward and performance, board governance practices can potentially affect or impact on the board's ability to make choices at each phase of this decision-making process. This is indicated by the posited directionality of the relevant arrow in Exhibit 11.1 and, in this respect, is consistent with the institutional logic and structural determinism implicit in Agency Theory and Managerial Power prescriptions. Critically, however, the proposed model suggests that institutional-structural influences are mediated rather than direct. For instance, whether or not director independence at the chair, board and committee levels will enhance the board's effectiveness to i) formulate optimal incentive plans; ii) measure CEO performance validly and reliably; and iii) reward on the basis of valid and reliable performance evaluation will depend, in turn, on how directors think and behave in relation to such matters.

The underlying causal logic and system of causal relationships can be extrapolated to develop other specific process-oriented models of board task performance which encompass the determination of fixed cash rewards, equity-based rewards, and non-cash rewards. The model proposed is intended to enable both scholars and practitioners to gain a better understanding of CEO reward and performance. It permits the formulation of prescriptions that will actually enable boards to make more rigorous and strategic decisions in the management of CEO reward and performance.

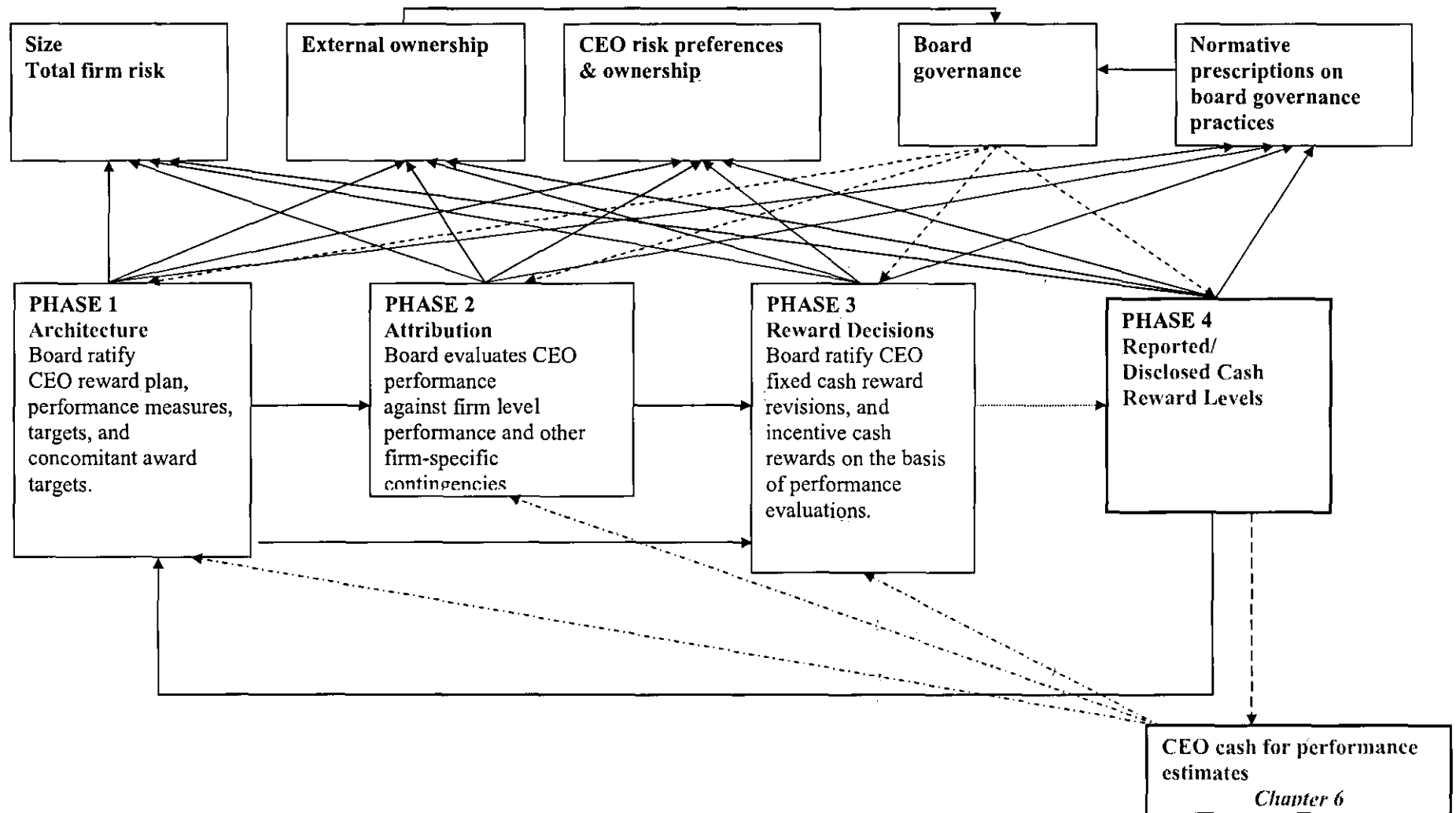
It is reasonable to speculate on the basis of results presented in this thesis that there is merit in refocusing attention in research, on board-level decision-making processes so as to clarify the critical capabilities a board may need to possess in order to manage and control CEO reward and performance through strategic choice and objective judgment. While the results of the large-sample analysis applied in this study support such a reorientation in research focus, small-sample case study investigation may help to elaborate the nature of decisional capabilities and processes further still. Specifically, case study research may be fruitful for

elucidating context-specific best practices that render the board more effective in controlling and managing CEO reward and performance.

As the findings of this study suggest, it is not enough to turn to purely economic or socio-political explanations for CEO cash reward and performance that bypass the underlying decisional processes. The insensitivities between CEO cash reward and performance may reflect inefficiencies in the decision-making process that are not explained by existing accounts. It is equally plausible that boards may simply lack sufficient information to ensure that CEO cash reward and performance are aligned.

What is missing here, however, is a theoretical specification of CEO cash reward and performance management which localises analysis and research to board decisional processes. More simply, reward without performance may be explained in terms of a lack of board capability to procure effective executive performance incentives, to identify criterion-relevant measures of CEO performance in order to make more accurate performance attributions, and, in turn, to make more appropriate and relevant CEO cash reward decisions. It is equally plausible that the observed lack of cash reward-performance sensitivity is attributable to inefficient board decisional processes rather than to the absence of board structural independence.

Exhibit 11.1 An Integrative Process-oriented Model of CEO Cash Reward and Performance Management



Reward decisions are not necessarily the outcome of a series of strategic choices and strategic planning and decision-making. Thus this thesis suggests that prescriptions need to be localised to the board's capabilities to control and manage CEO cash reward and performance. For example, it may be suggested that enhancing board capabilities in this specific area of board task performance requires developing capabilities in the following areas that coincide with the model:

- i) Enabling boards to select valid measures and indicators of CEO performance, and to understand that the choice of measures will influence the extent to which they can attribute firm-level performance to the CEO's decision and strategic management of the company.²⁹
- ii) Enabling strategic thinking and planning pertaining to CEO reward and performance, which involves interrogating reward proposals, ascertaining whether there is any scope for incentive distortion, and if so identifying what checks can be build into the system to discourage this.
- iii) Enabling the board to interrogate the validity and reliability of performance measures and other information sources provided by external consultants (such as market surveys).
- iv) Enabling the board to recognise that the terms, conditions and nature of performance hurdles should be directed to optimising performance incentives whilst constraining incentive distortion and manipulation.³⁰
- v) Enabling the board to recognise any deficits in terms of these capability requirements and select appropriate external advice and measure of redress.

²⁹ There has been a flood of literature on minimising measurement error in performance appraisals in both human resource management and applied psychology fields (for examples, see Cascio and Aguinis, 2005; Shields, 2007).

³⁰ Boards could also be guided to build constraints and conditions into CEO cash incentive plans that circumvent CEO influence and incentive distortion and design plans in ways to create real performance incentives. Clawback clauses, negative discretion formulae, more challenging performance hurdles can act to restore performance incentives by transferring *real* risk to CEO agents. One explanation advanced for the unexpected non-significant moderator effect of firm-specific risk is that performance-based cash rewards may not be viewed by the board as a legitimate source of risk transfer. This may also explain why CEOs with larger shareholdings (and thus a great exposure to downside risk), receive greater levels of reported-performance-based CEO cash rewards.

To enable boards to make more effective decisions to control and manage CEO cash reward and performance, it is important to enable them to recognise the implications of their decisions for CEO task performance and for the strategic management of the company. For example, is rewarding CEOs on the basis of mergers and acquisitions necessarily in the long-term interests of the company?

Any intervention to improve these capabilities needs to be premised on a cogent understanding of the dynamic decision-making processes of which CEO cash rewards are an outcome. For example, interventions could target each phase of the decision-making process encapsulated in the proposed decisional model, with a view to generating guiding principles to help boards control and manage CEO reward and performance more effectively. A similar logic can be extrapolated to the determination of equity-based reward plans, where it is also plausible to assume that that CEO cash reward levels may be an important *foci* or moderator of board decisions.

Further work is also warranted to establish whether managerial power attenuates the association between CEO reward and performance. It is recommended that further qualitative work be undertaken to investigate the socio-political dimension of reward determination and to elucidate board perceptions of this decision-making process and the basis on which directors judge the efficacy of related proposals put forward for board approval. Here too, a case study approach may shed light on whether and how boards constrain 'rent extraction' to determine, for example, whether they use negative discretion formulate for performance-based awards, or the prevalence of clawback clauses for CEO equity-based rewards. Further, case study research would enable the development of a board capability framework specifically relating to the management and control of CEO cash reward and performance. Qualitative research here would usefully supplement and extend the analysis. Indeed, knowledge on CEO reward and performance would strongly benefit from a mixed methods and multidisciplinary approach. Aggregate statistical analysis may not be easily amenable to the distillation of behavioural and socio-political factors that are hypothesised to influence the reward determination process. Qualitative research methods can serve as an important complement to quantitative research methods by elucidating through in-depth interviews for example, the role of organisational power and politics in affecting the CEO reward determination process, as well as the specific criteria used to evaluate performance.

Finally, future research in this area and indeed other areas of management research would greatly benefit from giving due consideration the assumptions underlying the specification of econometric models, in addition to parameter estimation. Besides having important implication for future research, this study has some important practical implications.

11.7 Conclusion

This chapter has reviewed the study's key empirical findings and conceptual contributions. It has delineated the study's chief contributions to research-based knowledge on CEO reward determination.

The results of this study suggest that CEOs in Australian public companies have enjoyed performance insensitive total cash reward. Even more surprising is the finding that CEO reported performance-based cash reward is insensitive to a range of accounting and market-based performance measures purportedly used by boards to determine CEO reward.

This thesis also set out to examine the extent to which firm, ownership, and board structural characteristics explain variation in CEO cash reward, using a system GMM approach to estimation. Moreover, it set out to empirically test and critically evaluate various structural and economic determinants of CEO cash reward determination identified in extant theory and research. One of the most compelling findings to emerge from the study is that the various corporate governance structures and practices identified by both Agency Theory and Managerial Power Theory as solutions to CEO reward excess and pay without performance do not appear to influence, nor moderate, these outcomes. These findings suggest that the theoretical and applied 'best practice' focus on board structural characteristics as the preferred means of improving the board's management of CEO reward and performance is largely misplaced.

The clearest empirical findings to emerge from this study are that firm size and external ownership concentration do have a significant influence CEO cash reward determination. Another very important and compelling finding to emerge from this study is that the entrenched approach to model specification and parameter estimation in extant empirical research limits the extent to which legitimate causal inferences can be drawn. This study shows that system GMM approach to estimation is more efficient in terms of reducing

methodological bias and accounting for the complex error structure of a dynamic panel model.

This study thus makes a significant contribution to extant empirical research and theory examining the association between CEO reward and performance. First, the study finds that CEO cash reward in the Australian context is insensitive to a range of performance measures reportedly being used in the management of CEO short term and long-term incentive plans. One of the more important findings to emerge from this study is that the reported performance-sensitive component of CEO cash reward is insensitive to different measures of firm level performance. These empirical findings contradict recent research conducted by Merhebi *et al.*, (2006) in which Australian boards are alleged to be diligent in managing the relationship between CEO cash reward and performance. These inconsistencies in findings also call into question whether such inconsistencies are in part method-driven. The current study identified a number of shortcomings associated with the application of a fixed effects approach to the estimation of the dynamic relationship between CEO cash reward and performance used by these authors. The criticisms levelled against the adequacy of the prevailing approach to model specification and parameter estimation of the relationship between CEO reward and performance, prompted the use of more sophisticated panel data techniques.

While theory and best practice prescriptions have continued to centre on board structural characteristics - most notably, board independence - as predictors of board monitoring and decisional effectiveness, there is no evidence that these prescriptions have led to CEO cash rewards becoming more performance-contingent. In essence, the widely embraced assumption that boards exhibiting greater structural independence may be more effective 'stewards' of owner interests may be 'too good to be true'.

While this thesis, like all such studies, does have a number of empirical constraints, it nevertheless suggests that a more complete understanding of CEO reward determination requires that greater attention be paid to board decision-making processes and capabilities pertaining to the management of CEO cash reward and performance; that is, to the perceptual and cognitive processes antecedent to reward outcomes, as opposed to either the board's nominal structural characteristics or prior firm performance per se.

It is also hoped that the approach taken here will motivate other researchers to build on and further refine the explanatory model applied. Indeed, the underlying causal logic and system of causal relationships depicted in the proffered model is capable of being extrapolated to develop other specific behavioural models of board task performance which encompass the determination of fixed cash rewards, equity-based rewards, and non-cash rewards. The model proposed is intended to enable both scholars and practitioners to gain a better understanding of CEO reward and performance, and to formulate prescriptions which will actually enable boards to make more rigorous and strategic decisions in the management of CEO reward and performance.

References

- Aboody, D., & Kasznick, R. (2000), 'CEO stock option awards and the timing of corporate voluntary disclosures', *Journal of Accounting and Economics*, 29(1): 73-100.
- Abowd, J.M. (1990), 'Does performance-based managerial compensation affect corporate performance', *Industrial and Labor Relations Review*, 43: 52-73.
- Aggarwal, R. K., & Samwick, A.A. (1999a), 'The other side of the trade-off: The impact of risk on executive compensation', *The Journal of Political Economy*, 107(1): 65-105.
- Aggarwal, R. K., & Samwick, A.A. (1999b), 'Executive compensation, strategic competition, and relative performance evaluation', *Journal of Finance*, 54(6):1999-2043.
- Anastasi, A. (1976), *Fields of Applied Psychology: Second Edition*, McGraw-Hill, USA.
- Australian Council of Superannuation Investors. (2006), 'CEO Pay in the Top100 Companies, 2005', *Research Paper by the ISS Australia*, Melbourne.
- Australian Stock Exchange Corporate Governance Council. (2003), *Principles of Good Corporate Governance and Best Practice Recommendations*, Sydney, Australian Stock Exchange.
- Baum, C.F., Schaffer, M.E., & Stillman, S. (2007), 'Enhanced routines for IV/GMM estimation and testing', *The Stata Journal*, 7(4):472-506.
- Beatty, R. P., & Zajac, E.J. (1994), 'Managerial incentives, monitoring and risk bearing: A study of executive compensation, ownership, and board structure in initial public offerings', *Administrative Science Quarterly*, 39: 313-335.
- Bebchuk, L., & Fried, J. (2002), 'Power, rent extraction, and executive compensation', *CESifo Forum*, 3(3): 23-28.
- Bebchuk, L., & Fried, J. (2004), *Pay Without Performance: The Unfulfilled Promise of Executive Compensation*, Harvard University Press, USA.
- Bebchuk, L., & Jackson, R. (2005), 'Executive pensions' *Journal of Corporation Law*, 30(4): 823-55.
- Becker, B. (2006), 'Wealth and executive compensation', *Journal of Finance*, 61(1): 379-397.
- Bender, R. (2004), 'Why do Companies Use Performance-related Pay for Their Executive Directors', *International Conference on Corporate Governance and Board Leadership*, 6-8 October 2003, 12(4):521-533.
- Bender, R., & Moir, L. (2006), 'Does 'Best Practice' in setting executive pay in the UK encourage 'good' behaviour?', *Journal of Business Ethics*, 67: 75-91.

- Berry, W.D. (1993), *Understanding Regression Assumptions*, A Sage University Paper, USA.
- Bettis, J. C., Bizjak, J.M., & Lemmon, M.L. (2005), 'Exercise behaviour, valuation, and the incentive effects of employee stock options', *Journal of Financial Economics*, 76(2): 445-470.
- Bilimoria, D. (1997), 'Perspectives on corporate control: implications for CEO compensation', *Human Relations*, 50(7): 829-858.
- Bloom, M., & Milkovich, G.T. (1998), 'Relationships among risk, incentive pay, and organisational performance', *Academy of Management Journal*, 41(3), 283-297.
- Blundell, R., & Bond, S. (1998), 'Initial conditions and moment restrictions in dynamic panel data models', *Journal of Econometrics*, 87: 115-143.
- Boyd, B.K. (1994), 'Board control and CEO compensation', *Strategic Management Journal*, 15(5):335-344.
- Bryan, S., Hwang, L.S., & Lilien, S. (2000), 'CEO stock-based compensation: An empirical analysis of incentive-intensity, relative mix, and economics determinants', *Journal of Business and Society*, 73(4): 661-693.
- Buck, T., Bruce, A., Main, B. & Udueni, H. (2003), 'Long Term Incentives Plans, executive pay and UK Company Performance', *Journal of Management Studies*, 40(7): 1709-727.
- Burns, N., & Kedia, S. (2006), 'The impact of performance-based compensation on misreporting', *Journal of Financial Economics*, 79(1): 35-67.
- Cadbury, A. (2002), *Corporate Governance and Chairmanship*, Oxford University Press, Oxford.
- Callaghan, S.R., Saly, R.J., & Subramaniam, C. (2004), 'The timing of stock option repricing', *Journal of Finance*, 59(4): 1651-1676.
- Carpenter, M.A., & Sanders, W.G. (2002), 'Top management team compensation: The missing link between CEO pay and firm performance?', *Strategic Management Journal*, 23(4): 367-375.
- Cascio, W.F., & Aguinis, H. (2005), *Applied Psychology in Human Resource Management: Sixth Edition*, Pearson Prentice Hall, USA.
- Cho, T.S., & Hambrick, D.C. (2006), 'Attention as the mediator between top management team characteristics and strategic change: the case of airline deregulation', *Organization Science*, 17(4): 453-469.

- Chu, C., Hu, H. & Chu, N. (2006), 'A framework for interpreting the antecedents of CEO compensation: An organizational adaptation perspective', *The Journal of American Academy of Business*, 8(2): 235-241.
- Clarkson, P., Nichols, S., & Walker, J. (2005), 'Evidence on the link between CEO remuneration and company performance', Working Paper, UQ Business School, The University of Queensland, Brisbane, Australia.
- Coffee, J.C. (2006), *Gatekeepers: The Professions and Corporate Governance*, Oxford University Press: Oxford.
- Conyon, M. (2006), 'Executive compensation and incentives', *Academy of Management Perspectives*, 20(1): 25-44.
- Conyon, M. J., & Murphy, K.J. (2000), 'The prince and the pauper? CEO pay in the United States and United Kingdom', *The Economic Journal*, 110: 640-671.
- Conyon, M.J., & Peck, S.I. (1998), 'Board control, remuneration committees, and top down management compensation', *Academy of Management Journal*, 41(2): 146-157.
- Conyon, M. J., & Sadler, G.V. (2001), 'Executive pay, tournaments and corporate performance in UK firms', *International Journal of Management Reviews*, 3(2): 141-168.
- Cordeiro, J.J., Mukherjee, P., & Kent, D.D. (2006), 'Non-parametric assessment of CEO compensation practices', *Management Research News*, 29(5): 242-251.
- Core, J.E., Holthausen, R.W., & Larcker, D.F. (1999), 'Corporate governance, chief executive officer compensation, and firm performance', *Journal of Financial Economics*, 51: 371-406.
- Coughlan, A.T., & Schmidt, R.M. (1985), 'Executive compensation, management turnover, and firm performance', *Journal of Accounting and Economics*, 7: 43-66.
- Craswell, A.T., Taylor, S.L., & Saywell, R.A. (1997), 'Ownership structure and corporate performance: Australian evidence', *Pacific-Basin Finance Journal*, 5: 301-323.
- Daily, C.M., Johnson, J.L., Ellstrand, A.E., & Dalton, D.R. (1998), 'Compensation Committee Composition as a Determinant of CEO remuneration', *The Academy of Management Journal*, 41(2): 209-220.
- Dalton, D.R., Daily, C.M., Ellstrand, A.E., & Johnson, J.L. (1998), 'Meta-analytic review of board composition, leadership structure, and financial performance', *Strategic Management Journal*, 19(3): 269-290.

- David, P., Kochhar, R., & Levitas, E. (1998), The effect of institutional investors on the level and mix of CEO compensation. *Academy of Management Journal*, 41(2): 200-208.
- Dechow, P.M. (2006), 'Asymmetric Sensitivity of CEO Cash Compensation to Stock Returns', *Journal of Accounting and Economics*, 42: 193 – 202.
- Decktop, J.R. (1988), 'Determinants of Chief Executive Officer compensation', *Industrial and Labor Relations Review*, 41(2): 215-226.
- Defina, A., Harris, T.C., & Ramsey, L.M. (1994), 'What is reasonable remuneration for corporate officers?', *Company and Securities Law Journal*, 12: 341-356.
- Deutsch, Y. (2005), 'The impact of board composition on firms' critical decisions: A meta-analytic review', *Journal of Management*, 33(6): 1016-1072.
- Devers, C.E., Cannella, A.A., Reilly, G.P., & Yoder, M.E. (2007), 'Executive compensation: A multidisciplinary review of recent developments', *Journal of Management*, 33(6): 1016-1072.
- Donaldson, L., & Davis, J.H. (1991), 'Stewardship theory or agency theory: CEO governance and shareholder returns', *Australian Journal of Management*, 16: 49-64.
- Egan, J. (2006), 'Equity Incentive Plans', unpublished lecture presentation on behalf of Egan and Associates, University of Sydney, May 2006.
- Eisenhardt, K.L. (1989), 'Agency theory: an assessment and review', *Academy of Management Review*, 14(1): 57-74.
- Ellig, B.R. (2003), *The Complete Guide to Executive Compensation*, McGraw Hill, New York.
- Fama, E.F. (1980), 'Agency problems and the theory of the firm', *Journal of Political Economy*, 88(2): 288-307.
- Fama, E.F., & Jensen, M.C. (1983), 'Separation of ownership and control', *Journal of Law and Economics*, 26(2): 301-325.
- Feldman, J.M. (1981), 'Beyond attribution theory: cognitive processes in performance appraisal', *Journal of Applied Psychology*, 66(2): 127-148.
- Finkelstein, S. (1992), 'Power in top management teams: Dimensions, measurement, and validation', *Academy of Management Journal*, 35: 505-38.
- Finkelstein, S., & Hambrick, D. (1988), 'Chief executive compensation: A synthesis and reconciliation', *Strategic Management Journal*, 9: 543-558.
- Finkelstein, S., & Hambrick, D. (1989), 'Chief executive compensation: A study of the intersection of markets and political processes', *Strategic Management Journal*, 10: 121-34.

- Gerhart, B., & Milkovich, G. (1990), 'Organizational differences in managerial compensation and financial performance', *Academy of Management Journal*, 33: 663-91.
- Gerhart, B., & Rynes, S.L. (2003), *Compensation- Theory, Evidence, and Strategic Implications*, Sage Publications: Thousand Oaks, CA.
- Gomez-Mejia, L. & Wiseman, R.M. (1997), 'Reframing Executive Compensation: an Assessment and Outlook', *Journal of Management*, 23, 291-374.
- Grabke-Rundell, A., & Gomez-Mejia; L.R. (2002), 'Power as a determinant of executive compensation', *Human Resource Management Review*, 12:3-23.
- Gregg, P., Machin, S., & Szymanski, S. (1992), 'The disappearing relationship between director's pay and corporate performance', *British Journal of Industrial Relations*, 31(1): 1-9.
- Guidry, F., & Leone, A.J., Rock, S. (1999), 'Earnings-based bonus plans and earnings management by business unit managers', *Journal of Accounting and Economics*, 26(3): 113-142.
- Gujarati, D.N. (2003), *Basic Econometrics-Fourth Edition*, McGraw-Hill, USA.
- Gumbel, A. (2006), 'Managerial power and executive pay', *Oxford Journal of Legal Studies*, 26(1): 219-33.
- Hall, B.J., & Liebman, J.B. (1998), 'Are CEOs really paid like bureaucrats?', *The Quarterly Journal of Economics*, 113(3): 653-691.
- Hall, B.J., & Murphy, K.J. (2002), 'Stock options for undiversified executives', *Journal of Accounting and Economics*, 33(1): 3-42.
- Hartzell, J.C., & Starks, L.T. (2003), 'Institutional investors and executive compensation', *Journal of Finance*, 56(6): 2351-2374.
- Haslam, S.A. (2007), *Psychology in Organizations: Second Edition*, Sage Publications, Oxford.
- Healy, P. (1985), 'The effect of bonus schemes on accounting decisions', *Journal of Accounting and Economics* 7: 85-107.
- Heath, C., Huddart, S., and Lang, M. (1999), 'Psychological factors and stock option exercise', *Quarterly Journal of Economics*, 112(2): 601-627.
- Holstrom, B. (1979), 'Moral Hazard and Observability', *The Bell Journal of Economics*, 10(1): 74-91.

- Huse, M. (2007), *Boards, Governancè, and Value Creation*, Cambridge University Press, Cambridge.
- Indjejikian, R.J. (1999), 'Performance evaluation and compensation research: An Agency Perspective', *Accounting Horizons*, 13(2):147-157.
- Indjejikian, R.J., & Nanda, D. (2002), 'Executive target Bonuses and what they imply about performance standards', *The Accounting Review*, 77(4):793-818.
- Institutional Shareholder Services. (2006), 'CEO pay: It's even higher than you think: Valuation of executive options in Australia', *ISS Research Paper*, Institutional Shareholder Services, Melbourne, ISS.
- Izan, H.Y., Sidhu, B. & Taylor, S. (1998), 'Does CEO pay reflect performance? Some Australian evidence', *Corporate Governance: An International Review*, 6(1): 39-47.
- Jaccard, J., & Turrise, R. (2003), *Interaction Effects in Multiples Regression: Second Edition*, A Sage University Paper, 72, USA.
- Jensen, M.C., & Meckling, W.H. (1976), 'Theory of the firm: managerial behaviour, agency costs and ownership structure', *Journal of Financial Economics*, 3:305-360.
- Jensen, M.C., & Murphy, K.J. (1990), 'Performance Pay and Top-management incentives', *Journal of Political Economy*, 98(2): 225-264.
- Jensen, M.C., Murphy, K. J. & Wruck, E. (2004), 'Remuneration: Where we've been, how we got here, what are the problems, and how to fix them. European Corporate Governance Institute', Finance Working Paper No. 44/2004: www.ecgi.org/wp.
- Ke, B., Petroni, K., & Safieddine, A. (1999), 'Ownership concentration and the sensitivity of executive pay to accounting performance measures: Evidence from publicly and privately held insurance companies', *Journal of Accounting and Economics*, 28(2): 185-209.
- Kerr, J.L., & Kren, L. (1992), 'Effect of relative decision monitoring on chief executive compensation', *Academy of Management*, 35(2): 370-397.
- Kiel, G.C., & Nicholson, G.J. (2003), 'Board composition and corporate performance: how the Australian experience informs contrasting theories of corporate governance', *Corporate Governance*, 11(3): 189-205.
- Knopf, J.D., Nam, J., & Thornton, J.H. (2002), 'The volatility and price sensitivities of managerial stock option portfolios and corporate hedging', *Journal of Finance*, 57(2): 801-813.
- Kraft, K., & Niederprum, A. (1999), 'Determinants of management compensation with risk-averse agents and dispersed ownership of the firm', *Journal of Economic Behavior & Organization*, 40(1): 17-27.

- Lambert, R.A., & Larcker, D.F. (1987), 'An analysis of the use of accounting and market measures of performance in executive compensation contracts', *Journal of Accounting Research*, 25:85-125.
- Larraza-Kintana, M., Wiseman, R.W., Gomez-Mejia, L.R., & Welbourne, T.M. (2007), 'Disentangling compensation and employment risks using a behavioural model of Agency Model', *Strategic Management Journal*, 28: 1001-1019.
- Lawler, E., & Finegold, D. (2007), 'CEO compensation: What board members think', *WorldatWork Journal*, Third Quarter, 38-47.
- Lazear, E., & Rosen, S. (1981), 'Rank order tournaments as optimum labour contracts', *Journal of Political Economy*, 89: 841-64.
- Leone, A.J., Wu, J.S., & Zimmerman, J. L. (2005), 'Asymmetric Sensitivity of CEO Cash Compensation to Stock Returns', *Journal of Accounting and Economics*, 42: 167- 192.
- Levinthal, D. (1988), 'A survey of agency models of organisations', *Journal of Economic Behaviour and Organization*, 9: 153-185.
- Lilling, M.S. (2006), 'The link between CEO compensation and firm performance: Does simultaneity matter?', *Atlantic Economic Journal*, 34:101-14.
- Lippert, R.L., & Moore, W.T. (1994), 'Compensation contracts of chief executive officers: Determination of pay-performance sensitivity', *Journal of Financial Research*, 18(3): 321-332.
- Lippert, R.L., & Porter, G. (1997), 'Understanding CEO pay: A test of two pay-to-performance sensitivity measures with alternative measures of alignment', *Journal of Business Research*, 40: 127-138.
- Merhebi, R., Pattenden, K., Swan, P.L., & Zhou, X. (2006), 'Australian chief executive officer remuneration: Pay and performance', *Accounting and Finance*, 46: 481-497.
- Mishra, C.S., McConaughy, D.L. & Gobeli, D.H. (2000), 'Effectiveness of CEO Pay-For-Performance', *Review of Financial Economics*, 9, 1-13.
- Morgan, A.G., & Poulson, A.B. (2001), 'Linking pay to performance: Compensation proposals in S&P 500', *Journal of Financial Economics*, 62(2): 489-523.
- Murphy, K.J. (2002), 'Explaining executive compensation: Managerial power versus the perceived cost of stock options', *The University of Chicago Law Review*, 69: 847-869.
- Murphy, K.J., & Zabjornik, J. (2004), 'CEO pay and appointments: A market-based explanation for recent trends', *American Economic Review Papers & Proceedings*, May 2004. OECD (2004), *Principles of Corporate Governance*, Paris, Organisation for Economic Co-operation and Development.

- O'Neill, G., & Job, M. (1999), 'Determinants of Executive Remuneration in Australian Organisations: An Exploratory Study', *Asia Pacific Journal of Human Resources*, 37(1), 65-75.
- O'Reilly, C.A., & Main, G.G.M. (2007), 'Setting the pay: It's more than simple economics', *Organizational Dynamics*, 36(1): 1-12.
- Ostrom, C.W. (1990), *Time Series Analysis: Regression Techniques Second Edition*, Sage Publications, USA.
- Oviatt, B.M. (1988), 'Agency and transaction cost perspectives on the manager-shareholder relationship: incentives for congruent interests', *Academy of Management Review*, 13(2): 214-225.
- Perkins, S.J., & Hendry, C. (2005), 'Ordering top pay: Interpreting the signals', *Journal of Management Studies*, 42, 7, 222-238.
- Perry, T., & Zenner, M. (2001), 'Pay for performance? Government regulation and the structure of compensation contracts', *Journal of Financial Economics*, 62: 453-488.
- Pollock, T.G., Fischer, H.M., & Wade, J.B. (2002), 'The role of power and politics in the repricing of executive options', *Academy of Management Journal*, 45(6): 1172-1182.
- Raghavan, R., Iyengar, J., Williams, J.H., & Zampelli, E.M. (2005), 'Sensitivity of executive pay to accounting performance measures in all equity firms', *Accounting and Finance*, 45:577-595.
- Reilly, M., & Scott, D. (2005), 'An inside look at the compensation committee', *WorldatWork*, 42(2): 34-40.
- Roodman, D. (2007), 'How to do xtabond2: An introduction to 'difference' and 'System' GMM in STATA', Working Paper No. 103, *Centre for Global Development*, 1-45.
- Sanders, W.G. (2001), 'Behavioral responses of CEOs to stock ownership and stock option pay', *Academy of Management*, 44(3): 160-178.
- Sayrs, L.W. (1989), *Pooled Time Series Analysis*, Sage Publications, USA.
- Shields, J.L., (2005), 'Setting the double standard: Chief executive pay the BCA way', *Journal of Australian Political Economy*: 56, pp. 299-324.
- Shields, J.L. (2007), *Managing Employee Performance and Reward: Concepts, Practices, and Strategies*, Cambridge University Press, China.
- Stapledon, G. (2006), 'CEO compensation in Australia's largest companies', in Ali, P. & Gregoriou, G. (eds), *International Corporate Governance After Sarbanes-Oxley*, New Jersey, John Wiley & Sons, pp. 319-36.

- Tevlin, S. (1996), 'CEO incentive contracts, monitoring costs, and corporate performance', *New England Economic Review*, January/February: 39-50.
- Tosi, H.L. & Gomez-Mejia, L.R. (1989), 'The decoupling of CEO pay and performance: an Agency Theory perspective', *Administrative Science Quarterly*, 34, 169-190.
- Tosi, H.L., Werner, S., Katz, J., & Gomez-Mejia, L.R. (2000), 'How much does performance matter? A meta-analysis of executive compensation studies', *Journal of Management*, 26(2): 301-339.
- Ueng, J., Wells, D.W., & Lilly, J.D. (2000), 'CEO influence and executive compensation: Large firms vs. small firms', *Managerial Finance*, 26(8): 3-12.
- Wasserman, N. (2006), 'Stewards, agents, and the founder discount: Executive compensation in new ventures', *Academy of Management Journal*, 49(5): 960-976.
- Weinberg, L. (1995), 'What is reasonable executive compensation', *Journal of Compensation and Benefits*, 11(1): 17-23.
- Westphal, J.D. (1998), 'Collaboration in the boardroom: Behavioural and performance consequences of CEO-board social ties', *Academy of Management Journal*, 42: 7-24.
- Westphal, J.D., & Zajac, E. (1995), 'Who shall govern? CEO/Board power, demographic similarity and new director selection', *Administrative Science Quarterly*, 40(1), 60-80.
- Westphal, J.D., & Zajac, E.J. (1996), 'Director reputation, CEO-board power, and the dynamics of board interlocks', *Administrative Science Quarterly*, 41: 507-529.
- Westphal, J.D., & Zajac, E.J. (1997), 'Defections from the inner circle: Social exchange, reciprocity, and the diffusion of board independence in U.S. corporations', *Administrative Science Quarterly*, 42: 161-183
- Winfrey, F.L. (1994), 'The control of CEO compensation by institutional investors: An empirical study of agency theory in large U.S. industrial corporations', *Research Papers*, 2(4): 211-224.
- Wiseman, R.M., & Gomez Mejjia, L.R. (1998), 'A behavioural agency model of managerial risk taking', *Academy of Management Review*, 23(1): 133-153.
- Wooldridge, J.M. (2000), *Introductory Econometrics: A Modern Approach*, South-Western College Publishing, USA.
- Wooldridge, J.M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, USA.
- Yermack, D. (1997), 'Good timing: CEO stock option awards and company news announcements', *Journal of Finance*, 52(2): 449-476.

Zajac, E.J., & Westphal, J.D. (1995), 'Accounting for the explanations of CEO compensations: Substance and symbolism', *Administrative Science Quarterly*, 40: 283-308.

Zhou, X. (2000), 'CEO pay, firm size, and corporate performance: evidence from Canada', *Canadian Journal of Economics*, 33(1): 213-15.

Legislation Cited

Corporate Law Economic Reform Program (Audit Reform and Corporate Disclosure) 2004

Corporations Act 2001

Company Law Review Act 1998

RARE BOOKS LIB.

11 MAR 2009

UNIVERSITY OF SYDNEY LIBRARY



0000000614019080

