Managerial Share Ownership, Firm Performance and Dividends: Australian Evidence

Arifur Rahman Khan
B Com in Accounting (Honours) ***University of Dhaka, Bangladesh***
M Com in Accounting ***University of Dhaka, Bangladesh***
MA in Public Policy ***GRIPS, Tokyo, Japan***

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Department of Accounting and Finance
Faculty of Business and Economics
Monash University, Australia

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ABSTRACT

This thesis examines the relationship between managerial share ownership and firm performance as well as the relationship between managerial share ownership and dividends in Australia. Agency theory, more specifically two alternative theories – incentive alignment and managerial entrenchment theory – provides the theoretical framework that underpins this thesis. The three empirical studies in this thesis examine the top 300 Australian listed companies for the period 2000 to 2006 and the methodology is based on multivariate regression analysis. Most importantly, all of the studies consider the potential endogeneity of managerial share ownership as well as the simultaneity between managerial share ownership and performance, and managerial share ownership and dividends.

There are several primary motivations for this thesis. First, it is argued that characteristics of the Australian legal system, ownership characteristics, market for corporate control, and other corporate governance features, mean that the Australian corporate governance system is markedly different from that of the US and the UK; these differences have the potential to impact the ownership-performance and ownership-dividends relationships examined. Second, much of the prior literature examines the relationship between managerial share ownership and performance using share ownership by all the directors, and does not distinguish between share ownership by the executive directors and by the non-executive directors, in particular, the independent directors. It is posited that executive directors and independent directors have different ownership-performance and ownership-dividends incentives and these are examined separately. Third, the Australian

dividend imputation system has interesting implications for the ownership-dividends relationship this thesis examines.

The first empirical study in this thesis investigates the relationship between managerial share ownership and performance measured by Tobin's Q and earnings. This study finds a negative relationship followed by a positive relationship (U-shaped) between managerial share ownership and performance. It is also documented that the relationship is bidirectional, that is, performance also affects managerial ownership but only when it uses Tobin's Q to measure performance. The study also documents a similar relationship for the executive directors' share ownership as for managerial share ownership as a whole. As posited, it does not find any relationship between share ownership by the independent directors and performance.

The second empirical study examines the relationship between managerial share ownership and discretionary accruals, as well as accrual adjusted earnings. The study finds a positive relationship followed by a negative relationship (inverse U-shaped) between managerial share ownership and the absolute value of discretionary accruals. It also finds that this relationship is driven by executive as opposed to independent directors' share ownership. It then re-examines the relationship between managerial share ownership and performance measured by earnings adjusted for accruals. Once again a U-shaped relationship is documented between managerial share ownership and adjusted earnings. It is also documented that the relationship is bidirectional. The analysis for the executive directors reveals a similar relationship

to that of managerial share ownership as a whole. Once again, no relationship is found between ownership by the independent directors and adjusted earnings.

The third and final empirical study investigates the relationship between managerial share ownership and the likelihood of paying dividends as well as dividend payouts. It is found in this study that firms are more likely to pay dividends when managerial share ownership, as well as ownership by the executive directors, is high. Related to this is a positive relationship documented between managerial share ownership and dividend payouts as well as executive directors' share ownership and dividend payouts. However, this study fails to find any significant relationship between ownership by the independent directors and dividends. Since the direction of causality may also be an issue, this study also investigates the simultaneous determination of managerial ownership and dividend payouts. It fails to find any simultaneous relationship between ownership by managers and dividend payouts.

The thesis as a whole presents some unique and robust results relating to the ownership-performance and ownership-dividends relationships, which are argued to be a result of certain Australian institutional features that are clearly different to those in the US and the UK. The results also support the argument that executive directors and independent directors have different ownership-performance and ownership-dividends incentives, and suggest that independent directors may be immune to the theorised incentive alignment or entrenchment effects associated with share ownership.

STATEMENT OF AUTHORSHIP

I hereby declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

Parts of this thesis were presented as explained in the 'Thesis-related Research Outcomes' with my supervisors, Dr Balasingham Balachandran and Associate Professor Paul Mather, as second and third authors, respectively.

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THESIS-RELATED RESEARCH OUTCOMES

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION AND OBJECTIVES

This thesis examines the relationship between managerial share ownership (hereinafter MSO) and firm performance, as well as the relationship between MSO and dividends in Australia for the top 300 Australian Stock Exchange (ASX) listed companies during the period 2000 to 2006. In doing so, three empirical studies have been conducted. The first empirical study investigates the relationship between MSO and firm performance measured by Tobin's Q and earnings. Since earnings as a performance measure may be affected by discretionary accruals, the second empirical study examines the relationship between MSO and discretionary accruals, as well as the relationship between MSO and earnings adjusted for discretionary accruals. The third and final empirical study investigates the relationship between MSO and the likelihood of paying dividends as well as dividend payouts. In all the three studies it is also posited that executive directors and independent directors have different ownership-performance and ownership-dividends incentives and these relationships are examined separately.

The seminal work of Jensen and Meckling (1976) has given a momentum to the managerial ownership literature by focusing on the separation of ownership and control that gives rise to potential conflicts between principals and agents. Jensen and Meckling argue that increased levels of MSO in a firm helps align the interests of owners and managers and therefore, mitigates agency problems. An alternative argument is that managers get entrenched when there is high MSO, thereby exacerbating the agency problem (Demsetz, 1983; Fama and Jensen, 1983).

Prior research uses Tobin's Q (hereinafter Q) and earnings as measures of firm performance to examine the relationship between MSO and firm performance. There has been extensive empirical research using different methodologies examining the relationship between MSO and firm performance measured by Q. These studies report mixed findings. For example, Morck et al. (1988), McConnell and Servaes (1990), and Hermalin and Weisbach (1991) find a nonlinear relationship between MSO and Q which they argue is consistent with managerial entrenchment. Typically, these show an initial positive relationship between MSO and Q consistent with the incentive alignment up to a certain level of MSO, followed by a decrease in performance consistent with an entrenchment effect. The precise pattern of the results and the turning points at which the entrenchment effects are first seen, vary between studies. These studies are reviewed in Section 3.2.1.

MSO itself may be affected by some other factors such as the contracting environment of the firm, the inherent riskiness of its assets, or its performance (Demsetz, 1983). Therefore, the possibility that MSO may be endogenously determined needs to be properly addressed while examining such a relationship.

With the exception of Hermalin and Weisbach, (1991), the aforementioned studies have failed to control for the issue of endogeneity of MSO. Interestingly, recent studies that have controlled for the endogeneity issue, find mixed findings as well. For example, Cho (1998) finds reverse-causality, that is, performance affects MSO and not the reverse. Demsetz and Villalonga (2001) fail to find any evidence of a significant relationship between MSO and firm performance, whereas Davies et al. (2005) find a bidirectional relationship between MSO and Q. A few Australian studies have examined the relationship between MSO and Q with relatively small samples, and the findings are mixed (see for example, Craswell et al., 1997; Welch, 2003).

Although Q is the most commonly used measure in examining the relationship between MSO and firm performance, a few studies have used earnings in further analysis as a supplementary rather than a primary measure, and these findings are also mixed. For example, Demsetz and Lehn (1985) and Demsetz and Villalonga (2001) use earnings as their performance measure and fail to find any significant relationship. Morck et al. (1988), using the same methodology that they use for Q, report results that are consistent with the entrenchment effect, with initial incentive alignment up to a certain level. In the context of Australia, Welch (2003) fails to find any significant relationship between MSO and earnings.

Apart from the mixed results in this area, it is also possible that the executive and non-executive directors, in particular the independent directors, are likely to have different incentives, which in turn may affect the ownership-performance

relationship.[1] Hence the first objective of this thesis in the first empirical study is to examine the relationship between MSO and firm performance measured by Q as well as earnings in Australia, using a relatively large sample. It also distinguishes between the executive directors' share ownership (hereinafter ESO) and non-executive directors, in particular independent directors' share ownership (hereinafter ISO), when examining this relationship.

There is a large body of literature finding that earnings management may influence earnings (see for example, Healy, 1985; Healy and Wahlen, 1999; Guidry et al., 1999). Warfield et al. (1995) argue that the contracts with constraints denominated in accounting numbers with various corporate stakeholders, could motivate the managers to choose accounting techniques to manage earnings depending upon the level of MSO. They find a negative relationship between MSO and the level of discretionary accruals, which they argue is consistent with the hypothesis that when MSO is low, the increased demand for accounting-based constraints may motivate the managers to choose the accounting policies to mitigate the accounting-based contractual restrictions. It is argued in this thesis that managers have incentives to manage earnings at both lower and higher levels of MSO. Firms with low MSO are subject to more accounting-based contractual constraints, as stakeholders perceive a lack of incentive alignment. These contractual provisions in turn provide incentives for managers to use accrual adjustments to circumvent such constraints. When MSO is high, the potential for entrenchment may also have contracting implications. Additionally, given that managers may manage earnings, earnings as a performance measure may be affected by earnings management

[1] See Section 2.4 for a more detailed discussion.

measured by discretionary accruals.[2] Thus the second objective of this thesis in the second empirical study is to examine the relationship between MSO and discretionary accruals, as well as to use earnings adjusted for discretionary accruals as a measure of performance when examining the ownership-performance relationship. Once again, this research also distinguishes between the share ownership by the executive and independent directors when examining these relationships.

Agrawal and Knoeber (1996) suggest that in addition to MSO, there are alternative mechanisms to reduce agency costs such as debt, appointments of independent directors, institutions and large block holders, the managerial labour market, and market for corporate control. A related body of literature uses an agency framework to explain dividend payouts to the shareholders and minimisation of the agency costs.[3] This is based on the view that managers' and shareholders' interests are potentially in conflict, as managers may act in their own interests at the expense of shareholders by spending cash on benefits that are not necessarily shared by the shareholders. Jensen (1986) argues that managers are less likely to engage in overinvestment and related activities if the amount of free cash flow controlled by them is reduced by the payment of higher dividends. It may also be argued that high dividend payouts force firms to utilise capital markets to raise funds required for the

[2]In a different context, Cornett et al. (2008), show that the estimated impact of corporate governance variables is much stronger on operating performance when discretionary accruals are removed from reported earnings.

[3]For the purposes of this thesis, dividend payouts are defined as regular interim and final dividends paid by the companies. In common with many studies (see for example, Jensen et al., 1992; Farinha, 2003), special dividends and share buy backs are excluded.

new projects, and that the ensuing scrutiny and monitoring by the underwriters and other market participants help reduce agency costs (Easterbrook, 1984).

There is also a group of studies showing a negative relationship between MSO and dividend payouts, which is consistent with the incentive alignment argument (see for example, Rozeff, 1982; Moh'd. et al., 1995). The rationale behind this is that an increase in MSO leads to lower agency costs, hence firms with higher MSO will have lower dividend payouts. On the other hand, Farinha (2003) argues that below an entrenchment level, MSO and dividend payouts may be seen as substitute governance devices, which lead to a negative relationship between these two variables. However, after a certain critical entrenchment level, MSO increases are associated with potential entrenchment related agency costs and it is argued that dividend policy becomes a compensating monitoring force. Accordingly, Farinha posits and finds that after a critical entrenchment level of MSO estimated in the region of 30%, the coefficient of MSO changes from negative to positive. However, Farinha (2003) did not address the potential endogeneity of MSO. In other words, MSO itself may be determined by some firm specific characteristics that affect the dividend policy, as suggested by Jensen et al. (1992). Moreover, the imputation system in Australia may also have a bearing on dividend payouts and Farinha's findings may not be relevant to Australia, as most resident shareholders would prefer fully franked dividends in order to receive tax credits on dividend income (see for example, Officer, 1990; Pattenden and Twite, 2008; Brown and O'Day, 2005).[4] As, *ceteris paribus,* firms are likely to have less incentive for low dividend payouts

[4]Dividend that carries a credit for income tax paid by the company. See Section 5.2.9 for a more detailed discussion.

at any level of MSO, the imputation tax environment provides a rich setting to examine the MSO-dividends relationship in Australia.

Brealey et al. (2007, p.433) list one of the ten unresolved problems in Finance as: "How can we resolve the dividend payout controversy?" Despite the extensive research devoted to solve the dividend puzzle, a complete understanding of the factors that influence dividend payouts and the manner in which these factors interact, is yet to be established. As such, the third objective of the thesis in the final empirical study is to re-examine the relationship between MSO and the likelihood of paying dividends as well as dividend payouts in a full imputation tax environment, whilst considering the fact that MSO itself could be determined by many of the same firm specific features that could affect the dividend payouts. Like the two other empirical studies of this thesis, this study also investigates the relationship for ESO and ISO separately.

1.2 MOTIVATION

In relation to MSO, it was previously argued that the agency framework provides two alternative theories, namely incentive alignment and managerial entrenchment, and these two competing theories make MSO a fertile area for research. More specifically, the competing theories relating to the relationship between MSO and firm performance, motivates the first empirical study mainly in two ways. First, it is argued that characteristics of the Australian legal system, ownership characteristics, market for corporate control, and other corporate governance features, mean that the Australian corporate governance system is markedly different from that of the US and the UK, and these differences have the

potential to impact the ownership-performance relationship. Second, it is argued in this thesis that for any given level of share ownership, executive directors are likely to be more sensitive to the effects of incentive alignment and entrenchment than non-executive directors. However, previous studies examine the relationship between MSO and performance using the share ownership of all the directors, and do not distinguish between ESO and ISO.[5] Additionally, there are a number of methodological limitations in the prior Australian literature that need to be addressed. This study fills this gap by examining the relationship between MSO and firm performance using Q and earnings as the measures of firm performance.

Managers have numerous market and/or contract driven incentives to manage earnings (see for example, Healy and Wahlen, 1999). Warfield et al. (1995) argue that the contractual constraints, designed to align interests and/or reduce the potential for opportunistic behaviour, are likely to be systematically associated with the level of MSO, and they find that the level of MSO has a negative impact on earnings management measured by discretionary accruals. Thus, in the second empirical study it is argued that earnings as a performance measure could be affected by earnings management, and is motivated by the earnings management literature in three ways. First, despite the fact that earnings management measured by discretionary accruals could influence the MSO-discretionary accruals relationship, no previous Australian study examines the relationship between MSO and discretionary accruals. Second, given that discretionary accruals could influence the MSO-earnings relationship, no previous study that examines the relationship between MSO and earnings addresses the issue of discretionary accruals. Hence

[5] For details see Section 2.5.

using earnings adjusted for discretionary accruals as a measure of performance, is timely. Third, once again given that executive directors could be more sensitive to incentive alignment and entrenchment as well as contractual constraints in comparison to the independent directors, it is considered necessary to consider the impact of ESO and ISO separately.

The third empirical study in this thesis examines the relationship between MSO and the likelihood of paying dividends as well as dividend payouts by the firms listed on the ASX. It is also motivated in three ways. First, none of the previous studies examine the agency perspective of dividends in the context of a full imputation tax environment where, *ceteris paribus*, firms have strong incentives to pay high dividends irrespective of the level of MSO. Second, previous research examining the MSO-entrenchment argument of dividends has failed to examine the possibility that MSO itself could be determined by other factors that also determine dividends (see for example, Jensen et al., 1992). Finally, this study once again differentiates between ESO and ISO, in view of their potentially different sensitivity to incentive alignment and entrenchment.

1.3 AUSTRALIAN INSTITUTIONAL FEATURES

Much of the prior research is derived from US and UK data, and country specific economic, legal and institutional factors are expected to impact upon the studies undertaken by this thesis. This thesis argues that features of the Australian legal system, market for corporate control, ownership characteristics and other corporate governance features, means that the Australian corporate governance system is markedly different from that of the US and the UK. It is argued in this

thesis that these features may mitigate or exacerbate the role of MSO in the Australian companies. The features are discussed below:

1.3.1 Differences in corporate governance

Several institutional differences between the corporate governance environment in Australia and countries such as the US and the UK, may have an impact on the relationships examined in this thesis. These differences can be broadly classified into two groups, external and internal, and are discussed below:

i) External

The ASX is much smaller than the US and UK stock exchanges in terms of the number of listed companies, market capitalisation and volume of trading. Institutional ownership in the ASX listed companies is also much smaller than the US and the UK. Hsu and Koh (2005) estimate that average institutional ownership in Australia is 48.1%. Cornett et al. (2007) find this to be 59.4% for the US and Webb et al. (2003) find it to be 69% for the UK.

Even large Australian companies have high levels of ownership concentration. For example, La Porta et al. (1999) report that 45% of a sample of the largest Australian companies had a shareholder holding more than 10% of the equity whilst only 10% of the largest companies in the UK and 20% of the largest US companies had a shareholder owning more than 10% of the equity.[6] Using a larger

[6]Whilst it is generally acknowledged in the literature that US public corporations are diffusely owned (see for example, La Porta et al., 1999), Holderness (2009), using data from a representative sample of US listed firms, argues that ownership concentration is higher than previously reported. However, when a sub-sample of firms in the S&P 500 Index (large firms) is examined, he reports a high prevalence of block holders but with an average shareholding of 16%. In contrast, the average unaffiliated block holding in the sample of this thesis is around 37%.

representative sample of Australian listed companies, Lamba and Stapledon (2001) report that 72.1% of these companies had a non-institutional block holder with a shareholding of at least 10%. Whilst the presence of block holders may suggest a level of external monitoring of management, there is evidence to suggest that they are generally passive and take an arm's length approach to their corporate investments (Lamba and Stapledon, 2001; Dignam and Galanis, 2004).[7] Moreover, proxy voting by shareholders in Australian companies is low in comparison to the US and UK. The evidence on voting indicates that 86% - 88% of shares was voted on in US companies, around 50% in the UK, but only 39% - 41% in Australia (Bethel and Gillan, 2002; Gillan and Starks, 2003).

Takeovers are generally viewed as an effective method of managerial discipline. Countries such as the US and UK are characterised by higher takeover rates than Australia. For example, Dignam (2005) conducts a survey of hostile takeovers where the target was an Australian listed company. He finds that in the 10 years from 1992-2001, there were 401 takeovers of Australian listed companies of which 7.2% of those takeovers were successful hostile bids. In comparison, Cosh et al. (2006) find that in the UK, for the period 1988-1998, successful hostile bids averaged just over 20% of total listed takeover activity. In the US for the period 1980-1996, Schwert (2000) finds the figure is 21%.

[7]Although there are some instances of intervention by Australian institutional investors and block holders, these are typically in cases of extreme corporate governance failures (for example, Coles Myer Ltd). Moreover, it has been argued that their ability to bring about long term change through direct intervention is negligible (see for example, Hill, 2000).

ii) Internal

A recent study by Aggarwal et al. (2009) develops a composite governance index based on 44 attributes and reports mean governance percentage scores for different countries. They find that the average values of their governance index for Australia, US and UK are 48%, 61% and 56% respectively. They also find that the difference in governance between Australian and US firms (governance gap) is significantly negative, that is, the Australian firm level governance is significantly lower than the governance in matching US firms. Accordingly, the overall corporate governance of firms in the US and UK appears to be stronger than those in Australia.

The evidence on private rent extraction (see for example, Dignam and Galanis, 2004) in Australian firms suggests that Australia is different from the other common law countries such as the US and UK. Bebchuk (1999) argues that the extent of ownership concentration in publicly listed firms, depends on the size of private benefits and control. The size of private benefits can influence the agency costs as well as ownership structure. When private benefits of control are very large, a shareholder owning a significant percentage of shares is unlikely to give up the control. Given that there is a less active market for corporate control as well as a weaker corporate governance system, a shareholder with a relatively small stake has the incentive to remain in the company and derive private benefits through expropriating the general shareholders.

Taken together, the aforementioned external as well as internal institutional features suggest that a shareholder does not need a particularly large shareholding to

maintain “practical control” in Australia (Lamba and Stapledon, 2001, p.12). Therefore, these institutional features may affect the empirical studies of this thesis, for example, managerial entrenchment effects associated with ‘practical control’ may take place at lower levels of ownership.

1.3.2 Dividend imputation system

Australia has a very different tax system on dividend income in comparison to the US. The US has a classical (‘double tax’) tax system, where dividends are paid out of after company tax income and then dividend income is taxed at the marginal tax rate of the receiving shareholder. The imputation tax system was introduced in Australia in 1987 to address double taxation. A dividend imputation tax system effectively eliminates the double taxation of dividends. Under the Australian imputation system, companies provide resident shareholders with a credit for corporate tax paid, which can be used to offset personal tax on dividend income. The dividends paid out of companies’ after tax profits (when tax is paid in Australia) carry imputation credits and are referred to as franked dividends. Profits that are earned and taxed outside Australia cannot be paid out to investors as franked dividends. Any dividends arising from the profits earned outside Australia will be unfranked and therefore subject to tax at the shareholders’ marginal income tax rate. Thus a major difference between the US and Australian system is that in Australia, franked dividends do not suffer from a tax disadvantage in comparison to unfranked dividends.

With respect to the payment of dividends, the effect of the dividend imputation system is to make the payment of franked dividends much more

prevalent in Australia than in countries that follow the double-taxation policy. Empirical support for this proposition is provided by Pattenden and Twite (2008), who find that gross, regular and net dividend payout ratios and dividend initiations increased after the introduction of dividend imputation, consistent with the demand for the distribution of tax credits via dividend payments. The findings of previous studies also support this contention (see for example, Officer, 1990).

1.4 CONTRIBUTIONS

The major contributions of the three empirical studies undertaken by this thesis are as follows: The first empirical study examines the relationship between MSO and performance, and contributes to the literature in a number of ways. First, this study presents some unique and robust results which are argued to be consistent with the features of the Australian corporate governance environment; specifically that managers have the potential to derive private benefits and maintain 'practical control' at relatively low levels of ownership. Second, whilst prior work focuses on MSO as a whole, this study argues that executive and independent directors have different incentives, and examines the relationship between ESO and performance and ISO and performance, separately. This study documents a similar relationship for ESO as for MSO as a whole. Therefore, the results support such differential incentives. Third, it uses a much larger dataset and addresses some methodological limitations associated with the previous Australian studies.[8]

The second empirical study explores the relationship between MSO and discretionary accruals, as well as performance measured by adjusted earnings and

[8] For example, the issue of endogeneity and reverse-causality for a nonlinear specification of MSO variables, have been addressed.

also contributes in three ways. First, this study examines the relationship between MSO and discretionary accruals in Australian companies, and presents some unique results consistent with the features of the Australian corporate governance environment; specifically that managers have the potential to derive private benefits and maintain 'practical control' at relatively low levels of ownership, which is reflected in contracting behaviour. Second, this is the first study to examine the relationship between ownership by managers and performance, using earnings adjusted to mitigate potential earnings management that are measured by discretionary accruals. The findings of this study support the argument for the need to recognise the possibility of discretionary accruals. Third, once again this study examines those relationships for ESO and ISO and presents some results that support the need to examine them separately.

The third empirical study examines the relationship between MSO and the likelihood of paying dividends as well as dividend payouts. It also makes three contributions. First, it provides some unique and robust results with respect to the MSO-dividends relationship, which imply that the free cash flow as well as agency perspective of dividends, may not be applicable in an imputation environment. Second, whilst prior work examines the relationship by examining MSO as a whole, it is argued that executive and independent directors have differential incentives that may influence this relationship. The findings of this study support the argument for the need to examine the relationship for ESO and ISO separately. Finally, it examines the relationship between MSO and dividends in a simultaneous framework. Therefore, this study minimises simultaneous bias and inconsistent parameter estimates.

1.5 CHAPTER SUMMARY AND STRUCTURE OF THE THESIS

This chapter has outlined the background and objectives of the thesis. The thesis examines the relationship between MSO and firm performance, as well as the relationship between MSO and the likelihood of paying dividends as well as dividend payouts. Tobin's Q and earnings are used to measure performance. Given that managers may manage earnings, the thesis also examines the relationship between MSO and earnings management measured by discretionary accruals. Since earnings as a performance measure may be affected by discretionary accruals, an accruals adjusted performance measure that addresses potential earnings management is also used.

The motivation for the three empirical studies reported in this thesis was also outlined, as were certain Australian institutional factors that are expected to impact upon these studies. The final section outlined the expected contribution of the thesis. The remainder of this thesis is arranged as follows. Chapter 2 presents the agency theory framework that underpins the three empirical chapters in this thesis. Chapter 3 presents the first empirical study that examines the relationship between MSO and firm performance measured by Q and earnings. The second empirical study is presented in Chapter 4, and examines the relationship between MSO and discretionary accruals as well as the relationship between MSO and earnings adjusted for discretionary accruals. Chapter 5 presents the third and final empirical study that examines the relationship between MSO and the likelihood of paying dividends as well as dividend payouts.

The three empirical chapters in the thesis are configured in a consistent manner. The first two sections of each chapter review the relevant literature as well as revisit the motivation of the study. The third section of each chapter sets out the theory development and research propositions. This is followed by a discussion of the methodology and the results. The final section of each of these chapters presents chapter summaries.

Chapter 6 gives an overall summary of the three empirical studies undertaken in this thesis. It also discusses the contributions as well as research implications of the findings of the empirical studies. Finally, the chapter ends with a discussion of the limitations and suggestions for future research.

CHAPTER 2

THEORETICAL FRAMEWORK

2.1 INTRODUCTION

The objective of this chapter is to discuss the theoretical framework underlying the research documented in this thesis. Specifically, this chapter discusses the theoretical underpinnings of the three empirical chapters in this thesis on: managerial share ownership and firm performance; managerial share ownership, discretionary accruals and performance measured by adjusted earnings; and managerial share ownership and dividends. The first two sections briefly discuss the agency problems and the related costs, respectively. Section 2.4 outlines some of the mechanisms, including MSO that may help to mitigate the agency problems. This section also elaborates on two theories associated with MSO – incentive alignment and entrenchment. Much of the prior literature relating to MSO focuses on MSO as a whole and does not distinguish between ESO and ISO. Section 2.5 discusses the different incentives that executive and independent directors may face, and also the rationale for examining the impact of ESO and ISO separately. Section 2.6 examines factors that may determine the level of MSO in a firm and the fact that MSO may be determined endogenously; the final section summarises the chapter.

2.2 AGENCY PROBLEM

As articulated by Jensen and Meckling (1976), an agency relationship arises when there is a contract between two parties, where one party (the principal) engages another party (the agent) to perform some duties on behalf of the principal. The principal delegates some decision making authority to the agent under such a contract. If both the parties in the agency relationship are utility maximisers, there is good reason to believe that the agent will not always act in the best interests of the principal. This results in an agency problem. Likewise the managers entrusted to manage the business might not perform their duties in a manner that maximises the wealth of the owners, again resulting in an agency problem.[9] Jensen and Meckling state that:

> *"Since the relationship between the stockholders and manager of a corporation fit the definition of a pure agency relationship it should be no surprise to discover that the issues associated with the separation of ownership and control in the modern diffuse ownership corporation are intimately associated with the general problem of agency."* (1976, p.309)

2.3 AGENCY COSTS

Jensen and Meckling (1976) argue that a principal has to incur some costs in order to ensure that an agent will take optimum decisions to maximise the principal's welfare. They state that:

> *"In most agency relationships the principal and the agent will incur positive monitoring and bonding costs (non-pecuniary as well as pecuniary), and in*

[9] As early in the 18th century, the seminal work of Adam Smith recognised this problem and states that :

> *"The directors of such companies, however, being the managers rather of other people's money than of their own, it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company."* (The Wealth of Nations, 1776, p.700)

> *addition there will be some divergence between the agent's decisions and those decisions which would maximize the welfare of the principal. The dollar equivalent of the reduction in welfare experienced by the principal due to this divergence is also a cost of the agency relationship, and we refer to this latter cost as the residual loss."* (1976, p.308)

Thus agency costs include: the monitoring expenditures by the principal, the bonding expenditures by the agent, and the residual loss. Monitoring expenditures, such as cost of employing the auditors, are incurred to monitor the acts of the agents. Bonding expenditures, such as cost of preparing financial and other reports are incurred in bonding the agents to act in ways consistent with the interests of the principals. Bonding and monitoring expenditures can limit the extent of divergent behaviour in the agents. Additionally there will be some divergence between agent's decisions and the decisions that could maximise the interests of the principals. The monetary equivalent reduction in the interests of the principals as a result of this divergence is regarded as residual loss.

2.4 MSO AS A MECHANISM TO ADDRESS AGENCY PROBLEM

The seminal work of Jensen and Meckling (1976) proposes that a possible solution to the agency conflict is to realign the interests of managers and shareholders through MSO. Agrawal and Knoeber (1996) discuss several mechanisms (such as debt, appointment of independent directors etc.) to address the issue of agency problem. In a more comprehensive analysis, Gillian (2006) has split these mechanisms into two groups: internal governance and external governance. According to Gillian, internal governance consists of the board of directors, managerial incentives, capital structure, by law and charter provisions and the internal control system. External governance, on the other hand, includes laws and regulations – markets for corporate control, product markets, labour market, markets

that emphasise providers of capital market information (credit, equity and governance analysts), markets that focus on accounting, financial and legal services from parties external to the firm, and private sources of external oversight such as the media. Accordingly, MSO as an internal governance mechanism may mitigate agency problems by aligning the incentives of managers and shareholders. Indeed Byrd et al. (1998) argue that, apart from financial incentives, other mechanisms to mitigate agency problems are considered imperfect and inadequate when managers: own little or no stock in the firm, are not compensated based on either stock or accounting performance, and have access to large amounts of internally generated cash flows.[10]

Similarly, Ang et al. (2000) attempt to measure the magnitude of agency costs. They focus on the question of whether there is a difference in the cost of running a firm and in the utilisation of its assets, between a firm facing zero equity agency costs (owner-managed) and firms where ownership and management are separated. Their findings suggest that agency costs are significantly higher when an outsider rather than an insider manages the firm, and are inversely related to the managerial ownership. They also find that agency costs increase with an increase in the number of non-manager shareholders.

[10] Gul and Tsui (2001) argue that directors' shareholdings is an appropriate proxy for the incentives of directors as well as any members of senior management who are not on the board. In the absence of detailed Australian data relating to stock options of such managers, this study follows Gul and Tsui (2001) and the related Australian literature, and uses directors' shareholdings for this purpose.

2.4.1 Incentive alignment theory

One of the two theories associated with MSO is the incentive alignment theory. According to this theory, MSO results in alignment of interest between managers and owners (Jensen and Meckling, 1976). The underlying rationale is that a corporate strategy of giving managers an ownership stake in the company, aligns the interests of the owners and managers and is beneficial to the long term performance of the firm. When they own more shares, they are less inclined to divert resources away from firm value maximisation, because their interests are more closely aligned with those of other investors. At that time they are likely to be more focused on improving performance and decisions that maximise shareholder value, as this also directly enhances their own wealth. Related to this, DeAngelo and DeAngelo (1985) argue that owners motivate the managers by encouraging them to invest in the company and become company stakeholders. They also argue that it aligns their interests with the owners by giving them voting as well as cash flow rights. Cash flow rights ensure their share of the profits while the voting rights help them to secure their position in the business.

There has been extensive research on the relationship between MSO and performance. Whilst the findings in previous research materials have been mixed, some of these studies find evidence in support of incentive alignment. For example, Oswald and Jahera (1991) find a positive relationship between ownership structure and firm performance. They observe higher excess share market returns accruing to firms with a high level of MSO. The higher level of MSO implies improved decision making, resulting in higher earnings and dividends. Similarly, Mehran (1995) finds that firm performance is positively related to the proportion of the equity held by the

managers and to the proportion of their compensation that is equity based. Their findings suggest that tying the compensation with the equity motivates the managers to improve firm performance. Consistent with the same notion, in a study of the effects of changes in ownership structure on performance for a sample of thrift institutions, Cole and Mehran (1998) find that the changes in performance are significantly associated with the changes in insider ownership. A more extensive review of the literature relating to incentive alignment is contained in Section 3.2.

The agency framework relating to dividends, suggests that cash payments to the shareholders may reduce agency costs. This is because dividend payments may force firms to raise additional funds from external capital markets, thereby resulting in increased external monitoring by the market participants (Easterbrook, 1984). It is also recognised that dividend payouts may reduce agency costs by limiting the amount of discretionary or free cash flow available to management (Jensen, 1986). Additionally, the incentive alignment argument has some implications for dividend policy as well. As MSO increases, managerial interests are aligned with that of owners, and agency costs may be reduced because of self monitoring (Jensen and Meckling, 1976). It is therefore argued that owners may demand lesser dividends as part of an optimum monitoring package (Rozeff, 1982). Rozeff (1982) and Moh'd et al. (1995) find a negative relationship between MSO and dividends, which can be argued to be consistent with a reduction in agency costs due to incentive alignment.

2.4.2 Entrenchment theory

An alternative theory relating to MSO is entrenchment theory. This theory posits that an incentive alignment occurs only up to a certain level of MSO. An increase in share ownership beyond that level may entrench the managers and exacerbate the agency conflict, instead of mitigating such a problem. The argument is that increases in managers' equity holdings give them extra voting power to ensure that their position in the company is secured (Demsetz, 1983). As a consequence of this, they may become more insulated from disciplining and controlling forces, such as monitoring by the board, the managerial labour market and/or the market for corporate control (Fama and Jensen, 1983). Such a situation is referred to as managerial entrenchment and the power they gain through entrenchment, may be used for their own interests rather than that of the shareholders as a whole (Weisbach, 1988). Sometimes they can reduce the probability of being replaced by making 'manager-specific' investments (Shleifer and Vishny, 1989). 'Manager-specific' investments are investments where corporate managers invest in businesses that are related to their own background and expertise, even if such investments are not optimal for the firm (Shleifer and Vishny, 1989). They can also extract higher wages and larger perquisites from shareholders, and obtain more latitude in determining corporate strategies.

It is also possible to argue that entrenchment is not just a consequence of voting power. Some managers, by virtue of their tenure with the firm, status as a founder or even personality, may be entrenched with relatively small stakes (Morck et al., 1988). On the other hand, managers with higher ownership stakes in firms,

with an active outside block holder or strong independent directors, may not be as entrenched.

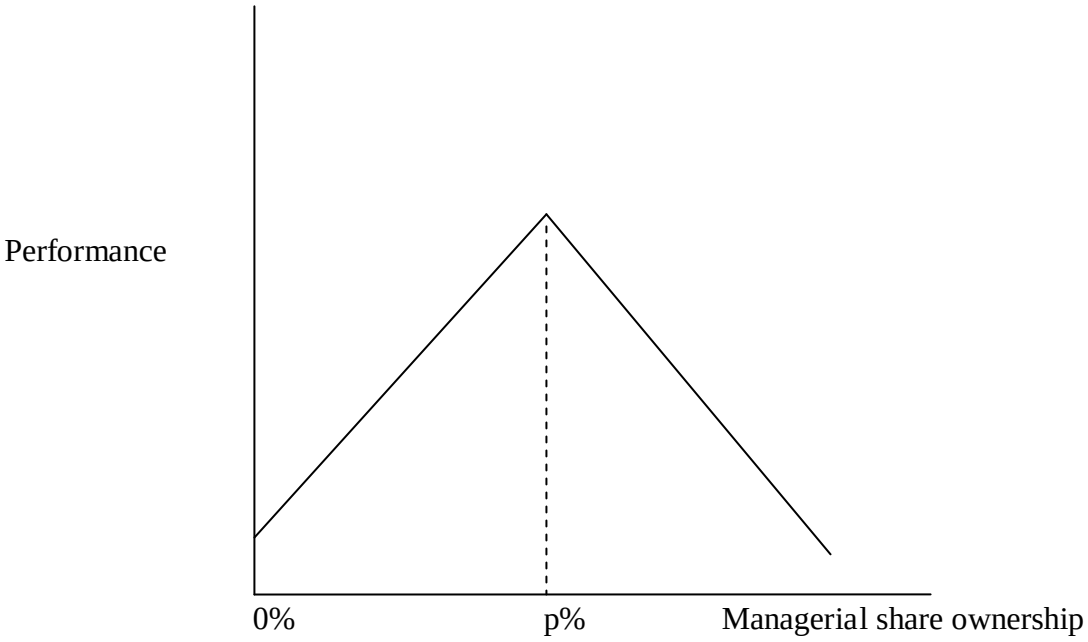

Figure 2.1: MSO-performance relationship: Entrenchment effect

Figure 2.1 illustrates the posited entrenchment effect in the context of the MSO-performance relationship. As MSO increases from 0% to p%, performance also increases because of an incentive alignment effect. Hence there is a positive relationship between MSO and performance up to p% of MSO. When MSO increases beyond p%, performance declines because of an entrenchment effect. The relationship between MSO and performance is negative beyond p%.

Several studies examine the MSO-performance relationship and consider the possibility of managerial entrenchment (see for example, Morck et al., 1988; McConnell and Servaes, 1990; Hermalin and Weisbach, 1991). The empirical findings of these studies suggest that there is a nonlinear relationship between MSO and firm performance. Entrenched managers make the internal governance

mechanism ineffective due to poor monitoring, and long term price reaction is significantly positive when the entrenched managers leave the business (Mcnabb and Martin, 1998). With respect to entrenchment, Denis et al. (1997) find that the likelihood of top management turnover is significantly greater in poorly performing firms with low MSO than in poorly performing firms with higher MSO. Related to this in a different study, Dahya et al. (2002) find that forced departures of CEOs tend to occur only when the top manager has less than 1% of the firm's capital and that, as the level of ownership increases, managers become increasingly entrenched in their positions.

Figure 2.2 summarises the role of MSO in the context of the owner-manager agency problem.

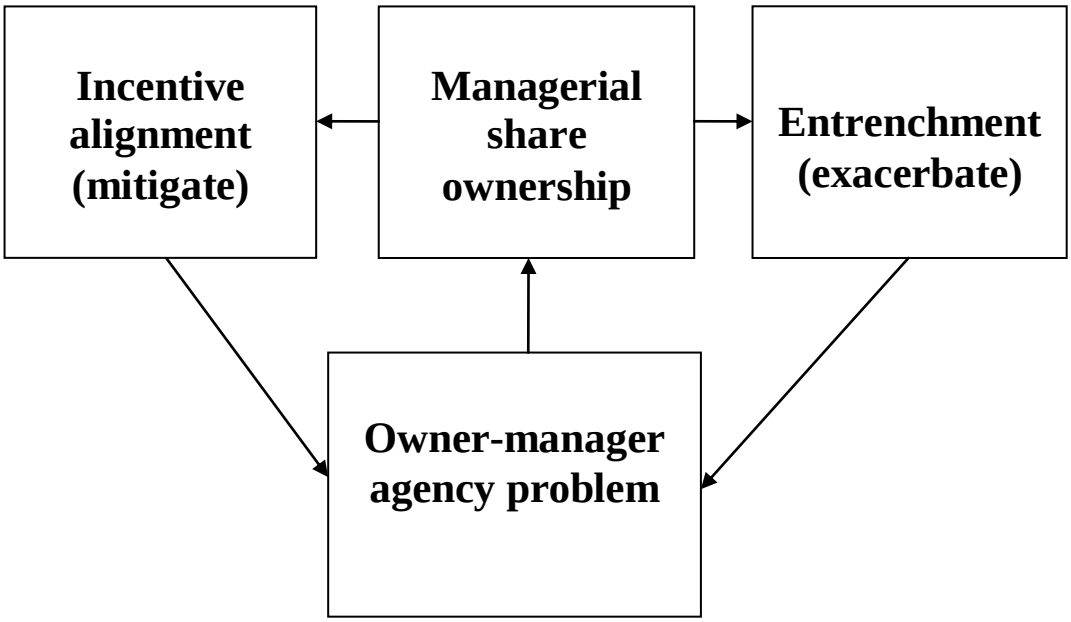

Figure 2.2: MSO and the owner-manager agency problem

The entrenchment argument has an interesting implication for the pattern of dividend payouts, which is unique and distinctive from the other competing theories

of dividend behaviour (Farinha, 2003). Farinha argues that below a certain level of managerial entrenchment, MSO and dividend policies can be seen as substitute monitoring devices. At that time stakeholders, including market participants, perceive lower agency costs because of the incentive alignment. Therefore, the relationship between MSO and dividends should be negative. However, after a certain critical entrenchment level, increases in MSO are associated with potential entrenchment related agency costs, and dividend policy becomes a compensating monitoring force. Entrenched managers may compensate by increasing dividend payouts in order to reduce agency costs. Accordingly, beyond the level of entrenchment there should be a positive relationship between MSO and dividends. Farinha (2003), therefore, posits and finds a nonlinear relationship between MSO and dividend payouts that are consistent with his entrenchment argument.[11]

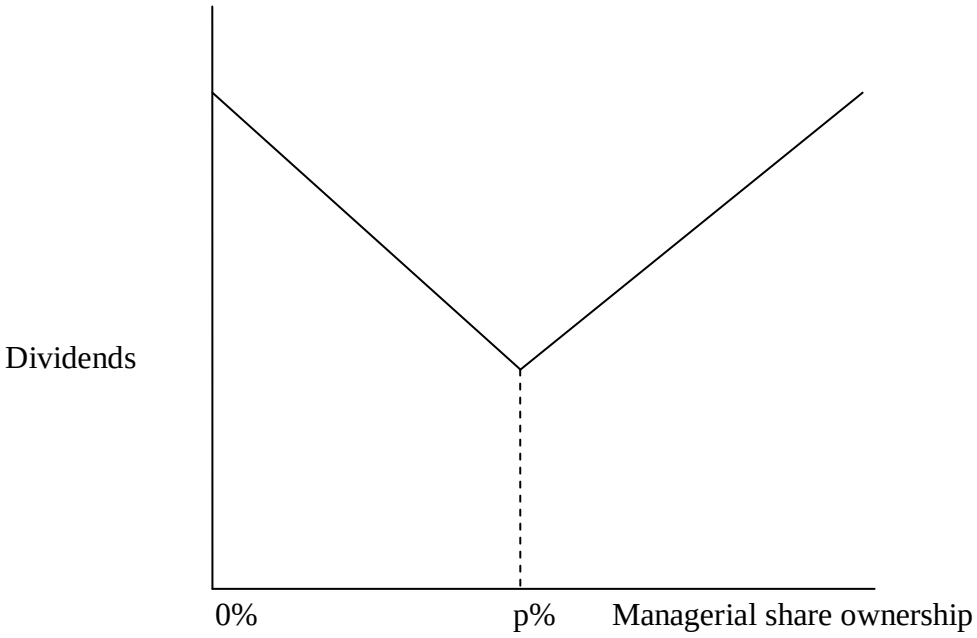

Figure 2.3: MSO-dividends relationship: Entrenchment effect

[11] However, Farinha (2003) did not control for endogeneity and, as discussed in Section 1.3.2, the Australian imputation system may have strong incentives that conflict with those posited by Farinha.

Figure 2.3 illustrates the posited entrenchment effect in the context of the MSO-dividends relationship. As MSO increases from 0% to p%, dividends decrease because of the incentive alignment effect associated with MSO being an alternative monitoring mechanism. Hence there is a negative relationship between MSO and dividends up to p% of MSO. When MSO increases beyond p%, dividends increase to compensate for entrenchment effects that may exacerbate the agency problem. Hence the relationship between MSO and dividends beyond p% becomes positive.

A more extensive review of literature relating to managerial entrenchment in the context of dividends is contained in Section 5.2.

2.5 MSO: EXECUTIVE VERSUS INDEPENDENT DIRECTORS

Most previous empirical studies use share ownership by all board members as a proxy for MSO by the insiders (see for example, Morck et al., 1988; McConnell and Servaes, 1990; Himmelberg et al.,1999; Holderness et al., 1999). Typically, board members include senior managers from inside the organisation who have necessary expertise to run the business and make decisions accordingly. However, the inclusion of the inside board members, commonly known as executive directors, may reduce the effectiveness of the board's monitoring function. To mitigate this problem, outside or non-executive directors, especially independent directors, are appointed to the board. As the executive directors are by definition part of the senior management team, the monitoring role is likely to primarily be the responsibility of the independent directors. Demsetz and Villalonga (2001) thus argue that exclusive reliance on MSO to track agency problems implies that all the members classified as management have a common interest. This may not always be true. Executive

directors and non-executive directors, particularly the independent directors, are likely to have different incentives as will any effect of their owning shares in the firm.

This thesis argues that executive directors are more closely involved in the operations of the business, and it is likely that their reputational capital is more closely tied to the firm performance as is their ability to influence performance. For any given level of share ownership, executive directors, as well as chief executive officers, are more sensitive to the effects of incentive alignment and entrenchment than independent directors. On the other hand, independent directors usually work part time, are typically paid less than executive directors and often sit on multiple boards. From an agency perspective, monitoring managerial activities on behalf of shareholders is an important part of their role.[12] It is argued that the economics of the managerial labour market provide incentives for the non-executive directors, more specifically the independent directors, to be effective monitors in order to enhance their reputation and the value of their human capital (Fama and Jensen, 1983).

There is an extensive research that supports the monitoring role played by the non-executives, in particular independent directors. Related to this, Gilson (1990) asserts that, whilst inside directors are also managers of the firms, outside directors have no continuing professional relationship with the firm other than as directors and being responsible for monitoring the management. Prominent professionals and academics are often specifically appointed to give the board greater expertise and

[12] There are however other perspectives, such as the resource dependence and managerial hegemony (see for example, Hung, 1998). In common with much of the accounting and finance literature, this thesis takes an agency perspective of corporate governance.

prestige. Their appointment may also enhance the credibility of the board, and the future directorships they are offered may be a function of the reputation they develop as effective monitors. Once again, there is empirical support for this proposition. For example, Cotter et al. (1997) report that shareholders of target firms, with outside directors who have multiple directorships, receive larger premiums in tender offers. Another study by Ferris et al. (2003), reports that firm performance is positively associated with the number of directorships subsequently held by directors of the firm.

Some studies, on the other hand, suggest that non-executive directors may not be effective as monitors. For example, Hart (1995) argues that their typically smaller financial stakes in the firm, compared with executives, implies that they may not be effective as monitors. He also argues that by sitting on multiple boards, these independent directors may not have enough time to effectively monitor management. Additionally, Higgs' report (2003) in the UK finds that non-executive directors may be recruited through personal contacts or friendships, which suggests that they may owe management for their positions and therefore become ineffective monitors.

There is another body of research that considers board composition and performance. For example, Yermack (1996) finds a positive relationship between the proportion of outside directors and performance. Weir et al. (2002) also find a positive relationship between the proportion of outside directors on the board and audit committee, and performance. On the other hand, Hermalin and Weisbach (2003) fail to find that a higher proportion of outside directors is correlated with

superior firm performance. However, they do find that outside directors are associated with better decisions relating to issues such as acquisitions, executive compensation and CEO turnover.

Morck et al. (1988) argue that monitoring requires both time and effort, and outside directors should be given significant economic incentives to motivate their monitoring activities. Their share ownership in the firms could be a mechanism to provide such incentives. However, concern for their reputation as effective monitors, is likely to outweigh any issues relating to incentive alignment or entrenchment that may otherwise arise as a result of owning shares in the firm.

Although the above discussion suggests that board members can be different in terms of their incentives as well as share ownership, there is only one prior study by Mura (2007), in the context of the UK, which separately examines the influence of share ownership by executive and non-executive directors and reports results consistent with different incentives. However, Mura (2007) does not differentiate between non-executive and independent directors.[13] Additionally, Australian institutional features (as discussed in Section 1.3) that are different from the UK, suggest that ownership by different groups of directors could be relevant to this research. Thus, this thesis examines the impact of ownership related to all directors,

[13] This thesis specifically identifies directors who meet the criteria for independence as set out in the Investment and Financial Services Association definition that was subsequently adopted by the ASX Corporate Governance Council, (2003), *Principles of Good Corporate Governance and Best Practice Recommendations*. According to ASX corporate governance principles, an independent director is a non-executive director and (i) is not a substantial shareholder of a company, (ii) has not been employed by the company within the last three years, (iii) has not been a principal of a material professional adviser to the company within the last three years, (iv) is not a material supplier or customer of the company, (v) has no material contractual relationship with the company, (vi) has not served on the board, which could materially interfere with the director's ability to act in the best interests of the company, and (vii) is free from any business relationship that could materially interfere with the director's ability to act in the best interests of the company.

executive directors and independent directors separately in the three empirical studies.

2.6 FACTORS INFLUENCING MSO

It is argued that MSO itself could be determined by many of the same firm specific features that could affect firm performance and financial policy (such as dividend and debt policy). In a seminal paper, Demsetz (1983) argues that a firm's ownership structure is an endogenous outcome of a process of trade-offs and selections that results in an optimum or equilibrium organisation of the firm. In their review paper, Jensen and Warner (1988) state that a limitation of the incentive alignment and entrenchment arguments, is that they treat ownership as exogenous and do not address the issue of what determines a firm's ownership concentration or why ownership concentration should not be chosen as a mechanism to maximise the firm performance.

Demsetz (1983) recognises the possibility for management to engage in non-value maximising activities at the cost of outside shareholders. He argues that rational investors would foresee this possibility and try to ensure that managers bear the cost of such non-value maximising behaviour by price protecting them at the time that they invest in the firm. As the resulting outcome is sub-optimal for managers and investors, it is in the interest of both managers and outside investors to find mechanisms to reduce such non-value maximising activities. To this end, Demsetz (1983) argues that increasing MSO is a means of aligning incentives and mitigating this problem.

According to Demsetz (1983), the cost of increasing MSO arises not necessarily through managerial entrenchment but from a different source. To increase MSO, the managers will need to invest much of their wealth in the firm they manage. As a consequence, managers bear higher firm-specific risks and sacrifice any benefits of diversification. To induce increased MSO, the firm or the other investors need to compensate the managers for bearing these higher risks, thereby raising the cost of capital. Also, *ceteris paribus*, relying on managers for capital to maintain a high level of MSO restricts the firm size and thus economies of scale. Accordingly, Demsetz argues that there exists a trade-off between agency costs and the cost of capital on the one hand and production costs on the other. In the process of considering these trade-offs as a part of maximising firm performance, shareholders as a whole determine the ownership structure and the level of MSO. Hence Demsetz concludes that the level of MSO is determined endogenously, together with other factors affecting the firm performance.

In the light of the above theoretical discussion it is argued that MSO could be influenced by a number of factors, including performance and dividends, and endogenously determined. These factors are summarised in Figure 2.6 and discussed in Sections 2.6.1 to 2.6.8.

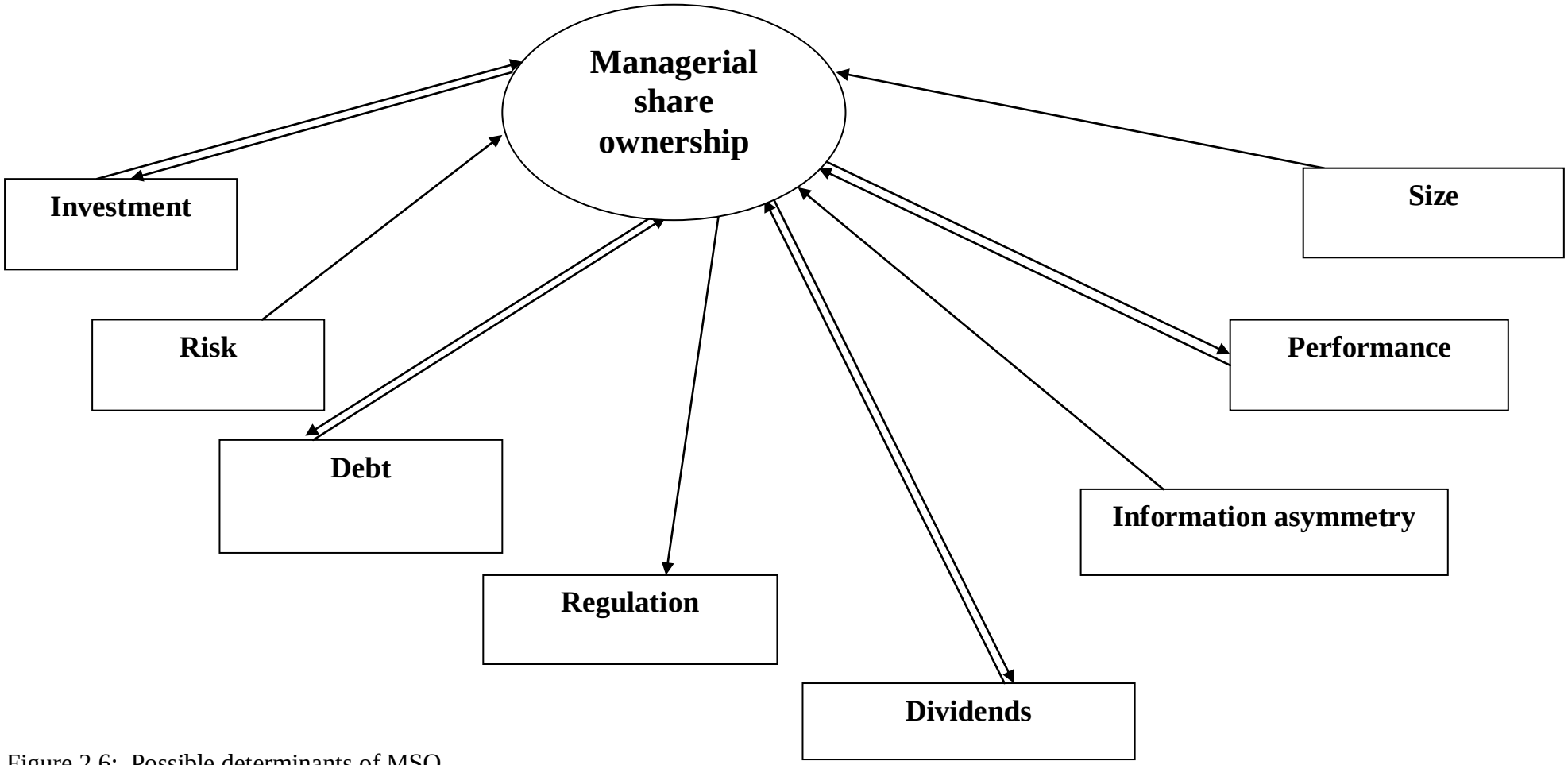

Figure 2.6: Possible determinants of MSO

2.6.1 Size

The size of a firm is likely to have a negative impact on the level of MSO for several reasons. Demsetz and Lehn (1985) state that:

> *"The larger is the competitively viable size, ceteris paribus, the larger is the firm's capital resources and generally, the greater is the market value of a given fraction of ownership."* (p.1158)

Personal wealth constraints may prevent the managers from increasing their share of equity ownership. Additionally, a manager's non-diversification and liquidity costs of holding a fixed percentage of the firm's equity, increases with firm size (Crutchley and Hansen, 1989). It can also be argued that MSO, as a mechanism to mitigate agency problems, may be less important in large as opposed to small firms since managers in large firms are usually subject to more scrutiny and external monitoring by regulators, media and financial analysts.

Empirical findings also suggest that there should be a negative relationship between MSO and firm size. Holderness et al. (1999) report that the market value of equity negatively influences the proportion of total managerial ownership, because managerial wealth constraints may affect the costs to managers of acquiring large share holdings in large firms. Other studies report similar findings (see for example, Cho, 1998; Himmelberg et al., 1999; Demsetz and Villalonga, 2001).

2.6.2 Risk

Demsetz and Lehn (1985) argue that the greater the uncertainty in the business environment, the greater the impact of managerial behaviour on firm value. They also argue that the greater the uncertainty in the business environment, the more difficult it is to monitor management, and the resulting higher monitoring costs

may increase the agency costs associated with equity. Such a situation may provide incentives to the shareholders to reduce monitoring costs and to ensure better monitoring and control by offering managers more equity to enhance incentive alignment. Thus, Demsetz and Lehn (1985) suggest a positive relationship between firm risk and MSO. Studies by Crutchley and Hansen (1989) and Jensen et al. (1992) provide similar arguments while modelling the relationships among MSO, debt and dividends. Both studies find positive relationships between risk and MSO. On the other hand, the risky firms have a higher probability of failure because of the potential volatility of profits. At sufficiently high levels of risk, risk averse managers may decide to choose lower levels of MSO, which implies a negative relationship between MSO and uncertain firm performance (Himmelberg et al., 1999; Holderness et al., 1999).

2.6.3 Debt

The use of debt capital may lessen the need for external financing thereby resulting in an increase in equity holding by the managers. This might exacerbate the agency problem. Kim and Sorensen (1986) report that debt levels and insider equity holdings are positively related, and they identify three possible explanations for this relationship. First, insiders may prefer debt to an external equity over finance growth, in order to maintain their corporate control. Second, insiders could attempt to avoid the agency costs associated with diffuse external equity. Third, firms with high inside ownership may have lower agency costs of debt. These arguments

suggest the possibility of a positive relationship between a firm's debt financing and MSO. [14]

Debt, on the other hand, can mitigate the agency problem. The severity of the agency problem usually depends upon the extent of discretionary power of the management over the corporate resources. Such discretionary power over the resources could be influenced by committed interest payment to debt holders or dividend payment to the shareholders. Thus, when a firm is funded largely by debt and/or has a well-established dividend policy, there is less scope for agency problems (see for example, Friend and Lang, 1988; Jensen et al., 1992).

2.6.4 Information asymmetry

Information asymmetry arises in an organisation when the managers have more or better information than the shareholders. This is very common in a large organisation when managers possess professional and situational knowledge not available to the owners. It becomes more acute when the managers have superior information to the shareholders.

The degree of information asymmetry is likely to influence the cost of monitoring the managers. Hence Himmelberg et al. (1998) argue that, if the scope for managerial discretion differs across firms according to observable differences in the composition of assets, then a prediction of the theory is that firms with assets

[14] One of the reasons is that covenants in debt contracts are more effective and have a greater disciplinary effect in the case of high MSO firms. Since the cost of violating covenants will be borne by the shareholders, it follows that the direct costs to managers of high MSO firms will exceed the costs to mangers of low MSO firms. This provides managers in high MSO firms with greater incentives to engage in behaviour that reduces the possibility of covenant violation. Accordingly, high MSO firms are likely to incur lower residual agency costs than their low MSO counterparts (Kim and Sorensen, 1986).

that are difficult to monitor will have higher levels of managerial ownership. For example, if the firms make large investments in intangible assets, it will be very difficult for outside investors to assess and monitor such spending. This might result in higher managerial ownership. On the other hand, spending on tangible assets is easier to monitor. Therefore, a firm making large investments in tangible assets could have relatively lower levels of managerial ownership.

2.6.5 Regulation

Many countries around the world have different regulations for certain industries, which could prevent ownership concentration by individuals or groups. Such regulations might control the level of MSO as well. Demsetz and Lehn (1985) suggest that regulations, other than direct ownership restrictions, may also limit the scope of agency problems, and thereby indirectly affect ownership concentration. For example, banks and financial institutions are often subject to a different regulatory environment to prevent undue influence from any group of shareholders that may affect the public interest.[15] Banks are usually required to make more disclosures to regulatory bodies and other stakeholders. Therefore, the equity stake of managers may be influenced by Australian banking regulations.

2.6.6 Performance

Bhagat and Jefirs Jr. (2002) argue that performance-based compensation and insider information suggest that performance could be a determinant of MSO. For example, better performance may increase the value of managerial stock options, and if such options are exercised then MSO is likely to increase. Additionally, if

[15] For example, banks and financial institutions in Australia are regulated by the Australian Prudential Regulation Authority (APRA). One piece of legislation introduced by APRA is the Financial Sector Act 1998 which covers the shareholdings in Banks and certain financial companies.

there exists a significant divergence between the managers' and shareholders' expectation about the future firm performance, then managers may have the incentives to change the level of MSO with respect to future performance. McConnell and Muscarella (1985) find that the stock market reacts positively to the announcements of increases in investment measured by planned capital expenditures, and reacts negatively to decreases in planned capital expenditures. Previous research by Cho (1998) and Davies et al. (2005) argues that investments affect performance, which in turn affects the level of MSO.[16]

2.6.7 Investment

Himmelberg et al. (1999) argue that firms with high investment spending may have high managerial ownership to alleviate the monitoring problems caused by the discretionary managerial investment. Investment represents the discretionary spending and can influence the level of MSO. The relationship between investment and MSO, however, depends upon the degree of monitoring. Hence they argue that the owners of a firm who have better technology or mechanisms to monitor managerial activities (for example, discretionary spending such as investment in research and development expenditures), may have a reduced need for incentive alignment and offer a lower level of MSO to the managers.

2.6.8 Dividends

According to the free cash flow argument, *ceteris paribus*, payment of high dividends may mitigate the agency problem as the level of internal funds available

[16] See Section 3.2 for a more detailed review of the MSO-performance relationship.

for managerial discretionary spending is reduced (Jensen, 1986). This situation may motivate the managers to reduce their stakes in the firms.

2.7 CHAPTER SUMMARY

One of the objectives of corporate governance is to mitigate agency problems and minimise agency costs. Corporate governance consists of a set of internal and external mechanisms; one such internal mechanism is MSO. MSO can align the interests of managers with that of the owners and can mitigate the agency problem. However, an increase in MSO may result in managerial entrenchment thereby exacerbating agency problems.

The equity ownership by all the directors, in particular MSO, may not be an appropriate proxy of the insiders. Many past and recent empirical studies have ignored this important issue. Given that executive and non-executive directors, specifically independent directors, are different in terms of their incentives, the relationships between MSO and performance as well as MSO and dividends might depend on whether the shares are owned by the executives or independent directors of the firm. Hence it is considered that empirical studies in this area also need to address the effect of ESO and ISO, separately.

MSO as a mitigation mechanism can impact upon firm performance as well as dividends. However, as discussed so far, MSO cannot be regarded as an exogenous variable; it may be influenced by some other firm specific characteristics including performance and dividends or vice versa. Hence the direction of causality remains unclear. Additionally, MSO-performance and MSO-dividends relationships

can both be driven by some common observed and unobserved firm characteristics. Therefore, any empirical analysis in this area needs to address the possibility that MSO may be endogenously determined.

Thus, this chapter gives an outline of the theoretical aspects as well as some fundamental issues relating to MSO. The following chapter, Chapter 3, presents the first empirical study relating to MSO and firm performance. Specifically, it examines the impact of MSO as well as ownership by different groups of managers on the performance of the firm.

CHAPTER 3

MANAGERIAL SHARE OWNERSHIP AND FIRM PERFORMANCE

3.1 INTRODUCTION

This chapter presents the first empirical study and investigates the relationship between MSO and performance in Australia. It addresses two research questions. First, this study examines whether there is a causal relationship between MSO and performance measured by Q and earnings. Second, it examines whether the relationship between ESO and ISO and these performance measures, are different.

As discussed in Section 1.2, two factors motivate this empirical study. First, much of the prior research is derived from US and UK data, and country specific economic, legal and institutional factors – including high ownership concentration, relatively passive block holders, very low participation in shareholder proxy votes and a less active market for corporate control – are expected to impact upon the examination of the relationship between MSO and performance. It is argued that these Australian institutional features are markedly different from that of the US and the UK and that could have an impact upon the relationship this study intends to

examine.[17] Second, previous studies examine the relationship between MSO and performance using the share ownership by all the directors, and do not distinguish between shares owned by the executive directors and by the independent directors.[18] This study argues that executive directors and independent directors have different ownership-performance incentives that are likely to impact on the relationship being examined.[19]

The remainder of this chapter is structured as follows. Section 3.2 discusses the relevant literature. Section 3.3 sets out the theory development and research propositions. This is followed by an outline of the research design in Section 3.4. The results are discussed in Section 3.5. Finally, Section 3.6 presents a summary of the chapter.

3.2 LITERATURE REVIEW

The relationship between MSO and firm performance has been widely researched during the last two decades (see for example, in the context of USA: Demsetz and Lehn, 1985; Morck et al., 1988; McConnell and Servaes, 1990; Hermalin and Weisbach, 1991; in the context of Australia: Craswell et al., 1997; Welch, 2003). These studies, however, have reported mixed findings and these have resulted in much debate in the literature.

The recent literature examining the ownership-performance relationship frequently discusses the possibility that MSO may be endogenously determined (for

[17] See Section 1.3.1 for a more detailed discussion.
[18] As mentioned before there is one prior study by Mura (2007) which examines the influence of share ownership by executive and non-executive directors in the context of the UK, and uses Q to measure performance.
[19] See Section 2.5 for a more detailed discussion.

example, Demsetz and Villalonga, 2001). That is, MSO itself could be determined by many of the specific features that could also affect firm performance. All the previous studies that examine the aforementioned relationship may be classified into two groups: studies that consider MSO as an exogenous variable and do not address the issue of endogeneity, and studies that treat MSO as an endogenous variable and control for endogeneity.

3.2.1 Studies that treat MSO as an exogenous variable

i) US studies

Demsetz and Lehn (1985) play the pioneering empirical role by examining a simple linear relationship between ownership concentration (as opposed to managerial ownership) and earnings, and find no significant relationship between them.[20] Morck et al. (1988) contend that the failure of Demsetz and Lehn (1985) to find a relationship between ownership concentration and earnings may be due to their use of a linear specification that does not capture an important nonlinear relationship. The major limitation of linear specification of MSO variables is that it does not consider the possibility of relationships within various levels of MSO. Therefore, a linear specification of MSO variables might produce misleading results. Accordingly, they argue the need to examine this relationship using a nonlinear specification.

Morck et al. (1988) examine the relationship between MSO and firm performance (measured by earnings and Q) using a piecewise regression and find a significant relationship between MSO and Q. They contend that the impact of MSO

[20] They use top 20, top 5 and Herfindahl index of ownership concentration as measured by summing the squared percentage of shares controlled by each shareholder of top 5.

on performance would vary over three different levels of MSO. The negative impact consistent with managerial entrenchment would dominate in the mid level, while the positive impact consistent with incentive alignment would be observed in the other levels (high and low). Accordingly, they observe that Q first increases between 0% and 5%, then declines between 5% and 25% and finally rises slightly beyond 25% as MSO increases. Motivated by Morck et al. (1988) many US and UK studies examine the potential for a nonlinear relationship between MSO and Q (see for example, McConnell and Servaes, 1990; Hermalin and Weisbach, 1991; Cho, 1998; Davies et al., 2005).

Holderness et al. (1999) examine the ownership-Q relationship in 1935 and 1995. They find some evidence that marginally supports Morck et al. (1988) but only for the year 1935. They document that MSO is positive and significant between the 0% and 5% level, and negative and significant between the 5% and 25% level. However, MSO is insignificant beyond the 25% level. With the sample of firms in 1995, there is no significant relationship between MSO and Q for the middle (between 5% and 25%) and high (beyond 25%) levels of MSO.

The model used by Morck et al. (1988) assumes that the relationship changes in direction over certain structural break points. They first apply it on their insider shareholdings data using 5% and 25% as the important break points. However, these break points lack theoretical justifications and may not be applicable to different periods or countries. For example, Hermalin and Weisbach (1991) document different break points in US companies for the CEO ownership and board composition.

McConnell and Servaes (1990) avoid the rigidity of the Morck et al. (1988) regression model by using a quadratic term for MSO in their model. One of the significant features of the quadratic model is that the turning point is empirically determined. They examine the relationship between MSO and Q for all the US firms (as opposed to just the larger firms examined by Morck et al.) using the Morck et al. (1988) piecewise linear regression, and find results that are different to those reported by Morck et al. More specifically, consistent with Morck et al., the coefficient of MSO is positive and significant for ownership between 0% and 5%, but the coefficient of MSO is insignificant for ownership between 5% and 25% and between 25% and 100%, which is not consistent with the results reported by Morck et al. (1988). McConnell and Servaes (1990) suggest that the possible reason for the difference in their findings from Morck et al. (1988) may be due to sample selection, as they use all firms whereas Morck et al. (1988) confine themselves to large firms. They also use a quadratic form of ownership variable to examine the relationship between MSO and Q, and find a significantly positive relationship between them until ownership reaches approximately 40% to 50% and then report a significantly negative relationship beyond that. Additionally, they use block holders' holdings combined with MSO instead of MSO alone and find a similar curvilinear relationship with Q. In general, the positive relationship at the low levels of MSO is interpreted as evidence of incentive alignment, and the negative relationship at high levels of MSO is interpreted as evidence of entrenchment.

ii) Non-US studies

The quadratic specification of MSO assumes that there is only one turning point. It does not allow for multiple turning points. Since Morck et al. (1988)

suggest that there may be more than one turning point in the relationship between MSO and performance, a higher order polynomial term for MSO may be more appropriate.

Short and Keasey (1999) use a cubic specification for MSO variables in UK companies, to extend the methodology of Morck et al. (1988) and McConnell and Servaes (1990). They use the ratio of market value and book value of equity instead of Q, and document significant coefficients of MSO variables. They find that MSO is positive between 0% and 15.58%, negative between 15.58% and 41.84% and positive beyond that. They argue that their empirical results suggest that UK management becomes entrenched at higher levels of ownership than their US counterparts.

The first Australian study in this area was conducted by Craswell et al. (1997) who examine the relationship between ownership structure and firm performance for the years 1986 and 1989. They do not find any significant relationship between MSO and Q using the linear and piecewise regression models. However, they find a significant curvilinear relationship for a sub-sample of larger firms in 1986 with a turning point of around 23% MSO. Farrer and Ramsay (1998) document a significantly negative relationship between MSO and Q but only on a univariate basis. More specifically, when they divide MSO into 3 groups – between 0% and 5%, between 5% and 20% and between 20% and 100% – they find a significantly negative relationship for the sub-sample of companies with MSO between 0% and 5% and a significantly positive relationship for the companies with MSO between 5% and 20%.

3.2.2 Studies that treat MSO as an endogenous variable

i) US studies

Demsetz (1983) and Demsetz and Lehn (1985) argue that MSO itself could be affected by some other factors such as the contracting environment of the firm, the inherent riskiness of its assets, or its performance.[21] Therefore, the issue of endogeneity is an important factor in examining the relationship between MSO and performance. Interestingly recent studies that have controlled for the issue of endogeneity of MSO report mixed findings as well.

Hermalin and Weisbach (1991) use a piecewise regression model and examine the relationship between CEO ownership, board composition and Q. They apply an Instrumental Variable (IV) regression approach to address the issue of endogeneity and find break points quite different from those found by Morck et al. (1988). Their results suggest that the relationship between CEO share ownership and Q is positive between 0% and 1%, negative between 1% and 5%, positive between 5% and 20%, and negative beyond that.

Demsetz and Villalonga (2001) re-examine the work of Demsetz and Lehn (1985) adding Q, MSO, leverage and fixed assets to sales variables, which were not used by Demsetz and Lehn (1985).[22] Using a two-stage least squares (2 SLS) regression to control for endogeneity, they do not find any significant relationship between ownership and performance measured by both Q and earnings. They also point out that other studies such as Loderer and Martin (1997) and Cho (1998),

[21] See section 2.6 for a more detailed discussion.
[22] Demsetz and Villalonga (2001) considered two ownership variables: the share holdings of firm's 5 largest shareholders and the shareholdings of a firm's top management and board of directors.

which control for potential endogeneity, fail to find that MSO affects performance. Hence they argue that Morck et al. (1988) and others that find that MSO influences performance, do so because they did not address the issue of endogeneity.

Himmelberg et al. (1999) observe that a large proportion of the cross sectional variation in MSO is explained by the unobserved firm heterogeneity, and they argue that this unobserved heterogeneity in the contracting environment has implications for econometric models designed to estimate the effect of MSO on firm performance. Accordingly they replicate the studies done by Morck et al. (1988) and McConnell and Servaes (1990) but control for industry fixed effects and firm fixed effects. They document that the MSO variables are statistically significant but only when they do not make any adjustment for firm fixed effects. When they incorporate variables related to firm characteristics and/or make correction for firm fixed effects, the ownership variables become insignificant.

A few empirical studies argue that firm performance may also affect MSO, that is, a relationship consistent with reverse causality. For example, Loderer and Martin (1997) focus exclusively on the role of ownership structure in acquisitions. Their results indicate that when ownership and performance are modelled simultaneously, there is no evidence that managerial holdings lead to better firm performance. Instead, their results imply that better acquisition performance encourages managers to increase their equity stakes.

Simultaneous equation models have also been used by Cho (1998), but with the addition of investment as another endogenous factor. The latter study extends the

methodology used in Loderer and Martin (1997), in that it accounts for both the issues of nonlinearity (using the breakpoints of Morck et al. (1988) in one of the equations) and endogeneity. Again, the author finds that ownership structure does not affect Q, but rather it is Q that affects ownership structure.

In a recent study Fahlenbrach and Stulz (2009) examine the relationship between changes in managerial ownership and changes in Q. They find that managers are likely to decrease their ownership when firms are performing well, but not increase their ownership when firms are performing poorly. After controlling for stock return they also find that an increase in ownership by management is related to an increase in Q. This result is driven by the changes in ownership by the officers and not by the directors. Fahlenbrach and Stulz (2009) do not find any evidence which could suggest that a decrease in ownership has an adverse effect on Q. They propose a managerial discretion theory to explain their findings. They argue that managers usually have high ownership in the young firms, since their ownership is a cheap form of financing and they may not sell the shares when the firms perform poorly in order to convince the shareholders that they bond themselves with the management policies. In contrast, when the firms are matured and perform well they start to diversify their stakes but in ways that are not destructive to value.

ii) Non-US studies

Non-US studies that have controlled for the issue of endogeneity report mixed findings as well. For example, in a recent study by Davies et al. (2005), they replicate the methodology used by Cho (1998) but using a quintic specification of MSO variables. They argue that even accepting that performance and MSO are

endogenously related to each other, misspecification of the managerial holdings-performance relationship may lead to spurious conclusions concerning the direction of causality. They examine the relationship among ownership structure, investment and corporate value using a 2 SLS regression, and find that the MSO-performance relationship is bidirectional. They also report multiple turning points for their UK data. They argue that (i) at high levels of MSO when external market discipline becomes ineffective, there will be a resurgence of entrenchment behaviour, (ii) with equity holdings around 50% managers will have implicit control of their company, but still not have objectives completely aligned to the external shareholders, and (iii) only at a very high level of MSO are managers incentives akin to other shareholders.

Mura (2007) examines the relationship between ownership structure, board composition and firm performance in the context of the UK. He uses the Generalised Method of Moments (GMM) methodology to control for endogeneity. He finds a cubic relationship between MSO and performance measured by Q. That is, an increase in MSO is associated with improving performance at low and high levels of ownership consistent with an incentive alignment effect, and it is associated with deteriorating performance at mid level consistent with an entrenchment effect. He then examines the same relationship for executive directors and non-executive directors. He finds a cubic relationship between ownership by executive directors and performance, which suggests that executive and non-executive directors are different in terms of ownership-performance relationships. He also finds that the proportion of non-executives on the board, but not their proportional ownership, is significantly and positively related to firm performance.

The issue of endogeneity in an Australian context was first addressed by Welch (2003). Replicating Demsetz and Villalonga (2001), she examines the relationship between MSO and Q. She controls for endogeneity using a 2 SLS regression and finds no significant relationship between MSO and Q. She also uses earnings to measure performance. However, once again she fails to find any significant relationship between ownership and performance as measured by earnings.

3.3 THEORY DEVELOPMENT AND RESEARCH PROPOSITIONS

A manager who owns a fraction of a firm's shares bears the consequences of managerial actions, thus aligning their incentives with other shareholders. As a consequence, such managers with shareholdings are likely to strive to engage in value maximising activities and make better investment decisions, which in turn should result in better performance (Jensen and Meckling, 1976). However, an increase in MSO can result in managers becoming entrenched (Demsetz, 1983; Morck et al., 1988).[23] The argument is that the extra voting power enables them to secure their position in the firm, thereby insulating them from certain disciplining mechanisms (for example, the managerial labour market and the market for corporate control) which are likely to have an adverse effect on firm performance. Hence the initial theory developed in this area would suggest a nonlinear relationship; more specifically, a positive relationship between MSO and performance consistent with incentive alignment up to a certain turning point,

[23]It is also possible to argue that entrenchment is not just a consequence of voting power. Some managers, by virtue of their tenure with the firm and status as a founder, may be entrenched with relatively small stakes. On the other hand, managers with higher ownership stakes, in firms with an active outside block holder or with strong independent directors, may not be as entrenched (Morck et al., 1988).

followed by a negative relationship when the costs associated with entrenchment exceed the incentive benefits of managerial ownership (see for example, Morck et al., 1988; McConnell and Servaes, 1990).

It is also argued that the previously discussed Australian institutional features such as ownership concentration, relatively passive block holders, low shareholder proxy voting and relatively low hostile takeover activity, may affect the relationship between MSO and performance.[24] Collectively, it is argued that a shareholder does not need a particularly large shareholding to derive private benefits and maintain "practical control" in Australia (Lamba and Stapledon, 2001, p.12). Accordingly, managerial entrenchment effects associated with 'practical control' may take place at lower levels of ownership.

Prior studies that identify an entrenchment effect, document it commencing at varying levels – for example, 5% in the US (Morck et al., 1988) and 7% in the UK (Davies et al., 2005). Theory suggests some combination of incentive alignment and entrenchment effects and therefore, a nonlinear relationship between MSO and performance. Whilst a precise pattern is hard to predict, it is posited that entrenchment effects are likely to be present at lower levels of MSO than previously documented.

Much of the prior literature that examines the relationship between MSO and performance does not differentiate between the roles of the managers owning the shares. This, however, may not be appropriate. As outlined in Section 2.5, executive

[24] See Section 1.3.1 for a more detailed discussion.

directors and non-executive directors (particularly the independent directors) are likely to have different incentives as will the effect of their share ownership. Executive directors are more closely involved in the operations of the business and it is likely that their reputational capital is more closely tied to the firm performance, as is their ability to influence performance.

On the other hand, it has been argued that the economics of the managerial labour market provide incentives for the non-executive directors, more specifically the independent directors, to be effective monitors in order to enhance their reputation and the value of their human capital (Fama and Jensen, 1983). The findings of the previous studies in the context of wider corporate governance support this contention.[25] The one prior study that separately examines the influence of share ownership by executive and non-executive directors, and that reports results consistent with different incentives, uses non-executive directors as a proxy for independent directors (Mura, 2007).

Hence it is argued that in the case of independent directors, concern for their reputation as effective monitors is likely to outweigh any issues relating to incentive alignment or entrenchment that may otherwise arise as a result of owning shares in the firm.[26] On the other hand, for any given level of share ownership, executive directors are likely to be more sensitive to the effects of incentive alignment and entrenchment than independent directors. Accordingly, it is expected that the relationship between executive directors' share ownership and performance to be as

[25] See section 2.5 for a more detailed discussion.

[26] It is also possible that the independent directors may own insignificant amounts of shares in the firm. Hence, as a part of further analysis this study also examines the impact of ownership on performance by all non- executive directors, that is, independent directors and affiliated (grey) directors.

posited in the case of MSO as a whole, but there should not be any relationship between independent directors' share ownership and firm performance.

3.4 RESEARCH DESIGN

3.4.1 Data

This study identifies the top 300 Australian firms by market capitalisation at two dates, 30 June 1999 and 30 June 2006. Consistent with the prior literature, it excludes banks, financial institutions, trusts and utility firms (49 firms), which have different disclosure requirements and/or different corporate governance structures. Another 46 firms have been excluded due to unavailability of corporate governance and control variables data. The final sample comprises the remaining firms with a total of 1273 firm-year observations over the seven year period.[27] As evident in Table 3.1, the sample firms belong to 21 Global Industrial Classification Standard Sectors (GICS) Industry Groups and 8 industrial sectors.

The required accounting information was collected from Aspect Fin Analysis and Connect 4 databases. The ownership and other corporate governance data was hand collected from the corporate governance disclosures, shareholding information and directors' report contained in annual reports.

[27] The final sample consists of 1307 firm-year observations. However, some outliers have been trimmed based on Q and MSO, by excluding any observation that is above or below the mean $\pm$ 3 standard deviations.

Table 3.1: Sample description

Panel A: Sample selection		
Number of firms		300
Less:		
Financial and utility companies		49
Companies without necessary information for corporate governance and control variable data		48
Total		203
Panel B : Analysis of sample by GICS sectors and industries		
GICS sector	**GICS industry**	
Material	Metal and mining	29
	Construction material	8
	Paper and forest products	6
	Chemicals	6
Industrials	Capital goods	16
	Transportation	5
	Commercial services and supplies	9
Health care	Health care equipment and supplies	10
	Health care provider and services	7
	Pharmaceutical, biotechnology and life science	8
Consumer staples	Food and staples retailing	5
	Food, beverage and tobacco	15
Consumer discretionary	Consumer services	8
	Retailing	13
	Media	14
	Consumer durables and apparels	10
	Automobile and components	7
Telecommunication	Diversified telecommunication	4
Energy	Oil, gas and consumable fuels	10
Information technology	Technology, hardware and equipment	5
	Software and services	8
Total		203

Table 3.2 reports the descriptive statistics. It provides mean, median, standard deviation and first and third quartile for the key variables. It is found that the average Q is 1.77; Welch (2003) reports the average Q to be 1.81 for the Australian firms. The average ROA (earnings) is 3.70%. The average MSO is 12.70%, which is almost similar to other studies in Australia (11.48% in Welch, 2003). Davies et al. (2005) report the average MSO for the UK firms to be 13.02% and Cho (1998) reports it to be 12.14% in the US. The average ESO and ISO are 6.50% and 1.66% respectively. The average leverage for the sample firms is 0.24.;

Welch (2003) finds it to be 0.25. The average ownership by the unaffiliated block holders (substantial share holders) is 36.14%. Davies et al. (2005) reported 37.34% average block holder ownership for the UK firms.

Table 3.2: Descriptive Statistics

	Mean	Median	Stdev	Q1	Q3
Q	1.765	1.266	1.409	0.910	2.039
USUBSP (%)	36.14	33.4	22.8	17.9	54.2
INV	0.080	0.05	0.086	0.027	0.103
BIND	0.562	0.60	0.209	0.40	0.727
AGE	2.637	2.655	0.698	2.079	3.091
LIQ	0.072	0.084	0.165	0.041	0.135
VOL	0.037	0.018	0.073	0.009	0.033
LEV	0.239	0.230	0.254	0.093	0.331
ESO (%)	6.50	0.030	13.10	0.000	14.30
MSO (%)	12.70	2.80	18.10	0.030	19.20
ROA (%)	0.037	0.054	0.189	0.028	0.085
ISO (%)	1.655	0.125	6.496	0	0.80
MVEQ	9.293	8.564	9.922	8.071	9.076
ASST	8.668	8.679	0.804	8.196	9.240

The above table reports descriptive statistics. In this table Q = Tobin's Q, calculated as the sum of the book value of debt, preference shares and market value of equity to book value of assets; USUBSP = Percentage of shares owned by the unaffiliated (excluding the directors) substantial shareholders; INV = Investment, calculated as the ratio of capital expenditure and year end book value of assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of the number of years since the firm was listed on the ASX; MVEQ = Natural log of market value of common equity; LIQ = Liquidity, calculated as the ratio of year end net operating cash flows and year end book value of assets; VOL= Volatility, calculated as standard deviation of earnings of preceding five years scaled by book value of assets; LEV = Leverage, calculated as the ratio of year end book value of debt and book value of total assets; ESO = Percentage of ordinary shares owned by the executive directors of the board; MSO = Percentage of ordinary shares owned by the directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ASST = Natural log of book value of assets; ROA = Net earnings after tax (before abnormal items) scaled by the book value of assets.

Table 3.3 presents the correlation matrix using Pearson correlation. Both Q and earnings (ROA) are negative and significantly correlated with MSO and ESO. ESO is negative and significantly correlated with ISO and BIND. It suggests that high ESO firms are less likely to have an independent board as well as high ISO. ASST is negatively correlated with MSO and ESO, suggesting that directors' as well as executive directors' equity interests are decreasing as the firm size increases. This is to be expected as MSO and ESO are expressed as a proportion of the total share ownership. The positive correlation between ASST and LEV suggests that large firms have high leverage. A positive correlation between MSO and VOL variables indicates that directors prefer to have greater equity interests in risky firms and/or that, *ceteris paribus,* the higher monitoring costs associated with such firms results in higher MSO being an optimum ownership structure.

Table 3.3: Correlation matrix

	AGE	ESO	INV	ISO	LEV	LIQ	USUBSP	VOL	BIND	Q	ROA	MVEQ	ASST	MSO
AGE	1.000													
ESO	**-0.155**	1.000												
INV	**-0.058**	0.007	1.000											
ISO	-0.011	**-0.050**	-0.055	1.000										
LEV	0.035	**-0.087**	-0.028	-0.011	1.000									
LIQ	**0.096**	**-0.078**	**0.062**	-0.036	0.008	1.000								
USUBSP	0.006	-0.001	**-0.064**	-0.009	**0.055**	**0.068**	1.000							
VOL	-0.032	0.002	**0.137**	-0.015	-0.016	**-0.339**	**-0.052**	1.000						
BIND	**0.126**	**-0.203**	**-0.073**	**-0.232**	**0.122**	**0.096**	**-0.114**	**-0.080**	1.000					
Q	**-0.145**	**-0.098**	**0.165**	0.011	**-0.084**	**-0.124**	**-0.063**	**0.364**	**-0.133**	1.000				
ROA	**0.076**	**-0.048**	**-0.066**	0.001	**0.007**	**0.249**	**0.087**	**-0.425**	**0.097**	-0.130	1.000			
MVEQ	**0.107**	**-0.088**	0.016	**-0.059**	0.033	**0.110**	**-0.091**	**-0.053**	**0.099**	**0.057**	**0.090**	1.000		
ASST	**0.223**	**-0.273**	**-0.143**	-0.027	**0.203**	**0.343**	**0.077**	**-0.232**	**0.259**	**-0.298**	**0.354**	**0.372**	1.000	
MSO	**-0.127**	**0.673**	**-0.049**	**0.227**	**-0.047**	**-0.111**	0.004	**0.086**	**-0.260**	**-0.078**	**-0.048**	**-0.120**	**-0.269**	1.000

The above table reports correlation matrices. In this table AGE = Age of the firm calculated by taking the natural log of the number of years since the firm was listed on the ASX; ESO = Percentage of ordinary shares owned by the executive directors of the board; INV = Investment, calculated as the ratio of capital expenditure and year end book value of assets; ISO = Percentage of ordinary shares owned by the independent directors of the board; LEV = Leverage, calculated as the ratio of year end book value of debt and book value of total assets; LIQ = Liquidity, calculated as the ratio of year end net operating cash flows and year end book value of assets; USUBSP = Percentage of shares owned by the unaffiliated (excluding the directors) substantial shareholders; VOL= Volatility, calculated as standard deviation of earnings of the preceding five years scaled by book value of assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Net earnings after tax (before abnormal items) scaled by the book value of assets; MVEQ = Natural log of market value of common equity; ASST = Natural log of book value of assets; MSO = Percentage of ordinary shares owned by the directors of the board. Bold text indicates significant coefficient.

3.4.2 Model specification

This study examines the relationship between MSO and performance using three regression techniques: OLS regression (Demsetz and Lehn, 1985), IV regression (Hermalin and Weisbach, 1991) and the three-stage least squares (3 SLS) simultaneous equations system (Cho, 1998). Three different types of managerial ownership variables have been used in this study; they are MSO, ESO, and ISO. The posited MSO-performance relationship outlined in Section 3.3 anticipates one turning point. Accordingly, when examining the MSO-performance relationship, this study uses a quadratic specification (see for example, McConnell and Servaeas, 1990) in regards to the MSO variables.

i) OLS model

The following equation has been used to examine the relationship between MSO and performance using an OLS regression equation.

$$\text{Performance} = \beta_0 + \beta_1(\text{MSO}) + \beta_2(\text{MSO})^2 + \beta_3(\text{Leverage}) + \beta_4(\text{Investment}) + \beta_5(\text{Unaffiliated shareholdings}) + \beta_6(\text{Board independence}) + \beta_7(\text{Firm age}) + \beta_8(\text{Size}) + \beta_{9\text{to}15}(\text{GICS Sectoral dummies}) + \beta_{16\text{to}21}(\text{Year dummies}) + \varepsilon \quad \textbf{(3.1)}$$

This study also uses the same equation to examine the relationships between ESO and performance and ISO and performance by replacing MSO with ESO and ISO respectively.

One of the key variables in the Equation (3.1) is performance. Most of the previous studies have used Q as the performance measure. Only a subset of previous studies discussed in Section 3.2 use earnings as a measure of operating performance,

typically as further analysis rather than a primary measure, and these findings are also mixed.[28] Demsetz and Villalonga (2001), in an ownership-performance context, argue that it would be more appropriate to look at an estimate of what management has attained, rather than a forward looking metric such as Q. They also suggest that accounting earnings, unlike Q, is not affected by investor psychology. Moreover, Core et al. (2006) argue that operating performance, as opposed to stock returns, is a more appropriate measure to examine the relationship between corporate governance and performance. Accordingly, this study uses Q as well as earnings to measure firm performance.

The normal definition of firm performance measured by Q is the ratio between the market value of the firm's assets (sum of market value of common shares and estimated market value of preference shares and debt) and the replacement value of these assets. In Australia, replacement cost data is unavailable and there is no active market for corporate debt (Craswell et al., 1997). Therefore, this study uses a simplified measure. In the numerator it takes the sum of the market value of common shares, book value of preference shares and debt (both long term and short term). In the denominator it takes the book value of the total assets. This measure is consistent with the definition of Q used by many previous US and UK studies (see for example, Loderer and Martin, 1997; Holderness et al., 1999; Demsetz and Villalonga, 2001; Davis et al., 2005). The definition of earnings is net earnings after tax (before abnormal items) scaled by the book value of assets (ROA).

[28]For example, Morck et al. (1988) and McConnell and Servaes (1990) report a non-linear relationship between MSO and earnings, whilst Demsetz and Villalonga (2001) and Welch (2003) do not find any relationship.

MSO, ESO, and ISO are calculated by taking the percentage of ordinary shares owned by the directors, executive directors and independent directors, respectively.

The control variables introduced in the above equation are largely followed by previous studies (see for example, Cho, 1998; Demsetz and Villalonga, 2001; Davies et al., 2005). The control variables are leverage, investment, unaffiliated substantial shareholdings, board independence, firm age and size.[29] Leverage is calculated as the ratio of book value of debt and book value of assets. Investment is calculated as capital expenditure scaled by the book value of assets (Cho, 1998, Davies et al., 2005). Unaffiliated substantial shareholdings are measured by taking the percentage of ordinary shares held by the substantial shareholders, other than the directors (Dahya et al., 2008).[30] Board independence is calculated as the number of independent directors scaled by the size of the board. Firm age is calculated by taking the natural log of the number of years since the firm was listed on the ASX (Anderson and Reeb, 2003). Size is proxied by the natural log of the book value of assets.

ii) IV model

If there is a problem of endogeneity in an OLS model, the explanatory variable becomes correlated with the error terms of the regression due to partial influences from the dependent variable. If this occurs, then the OLS estimates of the parameters are inconsistent (Green, 1997, p.710). The commonly used Hausman test

[29]When this study uses the simultaneous equations system (three-stage least squares), it treats investment as an endogenous variable (see for example, Cho, 1998).
[30]ASX listing rules require companies to disclose the details of all shareholders owning 5% or more of the shares.

(the null hypothesis that the OLS estimates are consistent) proposed by Davidson and Mackinnon (1989, 1993), can be used to see whether any explanatory variable is endogenously determined in an OLS model and the appropriateness of using the same model. This has to be done by regressing the endogenous variable on the explanatory, control and instrumental variables using an OLS regression. Then the dependent variable has to be regressed on the residuals obtained from the first regression along with the explanatory and control variables, by running another OLS regression. If the OLS estimates are consistent then the residuals obtained in the first stage should not be significantly different from zero.[31]

This study uses an IV regression equation to address the issue of endogeneity and reverse-causality. The equation used is identical to Equation (3.1). Hence the definitions of all the variables are identical to the same equation. Following Hermalian and Weisbach, (1991), this study uses the first lagged level of the ownership variables as the instruments.

iii) Simultaneous equations system

Although IV regression addresses the issue of endogeneity, it cannot address the issue of a simultaneous relationship between MSO and performance. McConnell and Muscarella (1985) and Chan et al. (1990) explore the second stage of Jensen and Meckling's (1976) implication concerning the link between investment and corporate value; they find evidence in support of the hypothesis that investment affects corporate value. Therefore, Cho (1998) hypothesises that MSO affects

[31] Although the Hausman test indicates that endogeneity is an issue, the results from the OLS model are also reported to facilitate comparison with prior studies.

investments which in turn could affect value.[32] He uses a simultaneous framework to examine the same relationship including three equations for MSO, value and investment. Consistent with Cho (1998), this study uses a simultaneous equations system and introduces three equations for MSO, performance and investment.

First, the following equation has been introduced along with Equation (3.1) for all the managerial ownership variables (MSO, ESO, and ISO).

$$\text{MSO} = \alpha_0 + \alpha_1(\text{Performance}) + \alpha_2(\text{Leverage}) + \alpha_3(\text{Investment}) + \alpha_4(\text{Volatility}) + \alpha_5(\text{Liquidity}) + \alpha_6(\text{Market value of equity}) + \alpha_{7\text{to}13}(\text{GICS Sectoral dummies}) + \alpha_{14\text{to}19}(\text{Year dummies}) + \varepsilon \quad \textbf{(3.2)}$$

The definitions of managerial ownership and performance variables are identical to those used in Equation (3.1). The control variables used in this equation are leverage, investment, volatility, liquidity and market value of equity. Volatility is calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets (Davies et al., 2005). Liquidity is calculated as the ratio of net operating cash flows and the book value of assets (Cho, 1998; Davies et al., 2005). Market value of equity is calculated by taking the natural log of the market value of common equity (Cho, 1998).

Consistent with Cho (1998), Equation (3.3) has been introduced to address the possibility that investment is endogenous when it runs the simultaneous equations system (3 SLS).

[32] Specifically, McConnell and Muscarella find that, on average, the stock market reacts positively to announcements of increases in planned capital expenditures and negatively to decreases in planned capital expenditures. Chan et al. show that share-price responses to announcements of increased R&D spending are significantly positive.

$$\text{Investment} = \delta_0 + \delta_1(\text{MSO}) + \delta_2(\text{Performance}) + \delta_3(\text{Volatility}) + \delta_4\ (\text{Liquidity}) + \delta_{5\text{to}10}\ (\text{GICS Sectoral dummies}) + \delta_{11\text{to}16}(\text{Year dummies}) + \varepsilon \quad \textbf{(3.3)}$$

The definitions of managerial share ownership, performance and investment variables are identical to the definitions used in Equations (3.1) and (3.2). The control variables used in this equation are volatility and liquidity.

3.5 RESULTS

3.5.1 MSO and performance

Panel A of Table 3.4 presents the results of OLS regression analysis for MSO and performance. In the first regression Q has been used as the performance measure. The results show significant P values of the coefficients MSO (0.000) and MSO^2 (0.000). The signs of MSO and MSO^2 are negative and positive, respectively. In other words, this study finds a negative relationship between MSO and Q up to a certain point, followed by a positive relationship. The negative relationship between MSO and Q suggests that in Australia an entrenchment effect sets in at lower levels of ownership. After a certain level of ownership is attained, this study finds a relationship consistent with incentive alignment. This is opposite to the findings of McConnell and Servaes (1990), who document that Q first increases and then starts to decline when MSO increases beyond a certain level of ownership. It is also found that Q is positively related to investment (INV) and board independence (BIND), and negatively related to the size (ASST) and age (AGE) of the firm. In the second regression, performance has been measured by earnings. It is found that significant coefficients for the MSO variables and their signs are also consistent with the first

regression. The coefficients of the other variables, except size (ASST), do not show any substantive difference from the results in the Q regression.[33]

To address the issue of endogeneity this study uses an IV regression. In Panel B the IV regression results are presented. The first regression result shows significant P values of the coefficients MSO (0.000) and MSO^2 (0.000). The results once again suggest a nonlinear relationship between MSO and Q. The signs of MSO and MSO^2 are once again negative and positive, respectively. This is consistent with the OLS results, and suggests that Q first decreases and then starts to increase when MSO increases beyond a certain point. The results of the other variables remain qualitatively the same. In the second regression the results of the MSO-earnings relationship has been presented. The results do not show any significant differences from the main findings.

Motivated by the findings of Cho (1998) and Davies et al. (2005) this study also uses a simultaneous equations system (3 SLS). It uses a system of three equations and introduces two additional equations (one for MSO and the other one for investment) to the original performance equations. In Panel C the second, third and fourth columns present the results relating to MSO and Q. The Q regression results show significant P values of the coefficients MSO (0.000) and MSO^2 (0.000). Once again this study finds a negative relationship between MSO and Q consistent with entrenchment effect, followed by a positive relationship consistent with alignment effect beyond a particular point. The results of other variables qualitatively remain unchanged. In the MSO regression the coefficient of

[33] Size has become positive and significant which is consistent with Anderson and Reeb (2003).

Q shows a significantly positive (0.059) value. Interestingly, this implies that Q also affects MSO. In other words, it refers to a bidirectional relationship between MSO and Q which is consistent with Davies et al. (2005). The results of the investment (INV) regression suggest that MSO also affects investment which is consistent with Cho (1998). The last three columns present the results relating to MSO and earnings. The results of ROA regression show significant P values for the coefficients of MSO (0.021) and MSO^2 (0.071). Once again it supports the previous findings of a nonlinear relationship between MSO and performance. For the MSO regression, the coefficient of ROA shows a positive insignificant value. Therefore, it can be said that ROA does not significantly affect MSO. In other words, there is no bidirectional relationship between MSO and earnings. This is inconsistent with the findings of the MSO-Q relationship. For investment (INV) regression it is documented that both MSO as well as earnings affect investment.

Table 3.4: Relationship between MSO and performance

Panel A: OLS regression		
	Q	ROA
MSO	-2.065	-0.018
	(0.000)	(0.067)
MSO^2	3.697	0.093
	(0.000)	(0.034)
LEV	-0.059	-0.094
	(0.661)	(0.006)
INV	1.974	0.013
	(0.001)	(0.869)
USUBSP	-0.203	0.043
	(0.205)	(0.183)
BIND	0.241	0.077
	(0.023)	(0.004)
AGE	-0.130	-0.002
	(0.000)	(0.951)
ASST	-0.361	0.085
	(0.000)	(0.000)
Intercept	5.601	-0.707
	(0.000)	(0.000)
Adj. R^2	0.193	0.167
Panel B: IV regression		
MSO	-2.273	-0.122
	(0.000)	(0.012)
MSO^2	4.261	0.255
	(0.000)	(0.014)
LEV	-0.052	-0.095
	(0.701)	(0.006)
INV	3.635	0.096
	(0.000)	(0.626)
USUBSP	-0.116	0.075
	(0.439)	(0.225)
BIND	0.417	0.213
	(0.321)	(0.045)
AGE	-0.106	-0.002
	(0.000)	(0.661)
ASST	-0.286	0.077
	(0.000)	(0.000)
Intercept	4.501	-0.623
	(0.000)	(0.000)
Adj. R^2	0.147	0.144

(cont)

Table 3.4 (cont)

Panel C: Simultaneous equations system (3 SLS)

	Q	MSO	INV	ROA	MSO	INV
Q		0.018	0.019			
		(0.059)	(0.000)			
ROA					0.042	0.130
					(0.817)	(0.089)
MSO	-2.518		0.147	-0.133		0.128
	(0.000)		(0.002)	(0.021)		(0.007)
MSO^2	4.481		-0.289	0.293		-0.234
	(0.000)		(0.000)	(0.071)		(0.005)
LEV	-0.076	-0.039		-0.097	-0.103	
	(0.525)	(0.054)		(0.000)	(0.538)	
INV	3.768	-0.147		0.087	-0.103	
	(0.000)	(0.325)		(0.227)	(0.538)	
USUBSP	-0.161			0.067		
	(0.387)			(0.228)		
BIND	0.443			0.198		
	(0.071)			(0.811)		
AGE	-0.098			-0.002		
	(0.026)			(0.816)		
ASST	-0.267			0.078		
	(0.000)			(0.000)		
VOL		0.094	0.065		0.173	0.144
		(0.355)	(0.153)		(0.071)	(0.002)
LIQ		-0.067	0.051		-0.023	0.178
		(0.164)	(0.001)		(0.892)	(0.010)
MVEQ		$-0.197X10^{-5}$			$-0.177X10^{-5}$	
		(0.002)			(0.004)	
Intercept	4.859	0.064	0.082	-0.663	0.084	0.111
	(0.000)	(0.109)	(0.000)	(0.000)	(0.024)	(0.000)
Adj. R^2	0.151	0.068	0.119	0.150	0.065	0.134

The above table reports the regression results regarding MSO and performance. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of the number of years since the firm was listed on the ASX; ASST = Natural log of the book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and the book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

This study also estimates the turning points in the U-shaped relationship between MSO and performance reported in Table 3.4. Figure 3.1 presents the graph of the estimated relationship between MSO and performance measured by Q and ROA. The estimated turning point for MSO and Q is 26.7 % and MSO and ROA is 23.9%.[34]

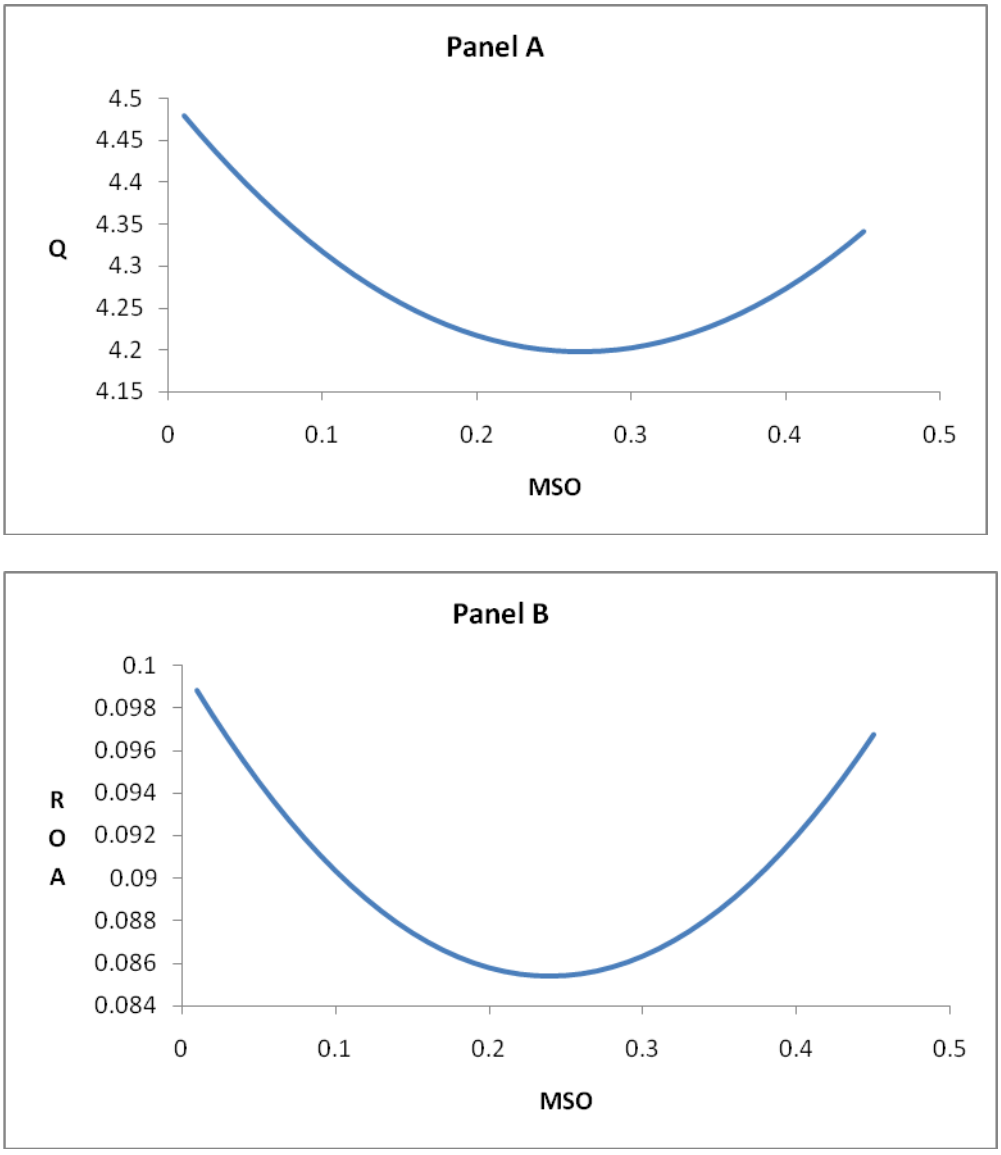

Figure 3.1: Relationship between MSO and performance

[34] The turning points are estimated using the IV regression results presented in Panel B of Table 3.4.

Overall a nonlinear U-shaped relationship between MSO and performance measured by Q as well as earnings suggests that in Australia, as posited, an entrenchment effect may set in at a relatively lower level of ownership. This unique result implies that the ownership-performance relationship is context specific, with the wider corporate governance systems impacting on the theorised incentive effects. Additionally, the very different result documented by this study from previous Australian studies may be for two reasons. First, compared to the previous Australian studies this study uses a much larger sample with a panel dataset. Second, this study controls for the issue of endogeneity and reverse-causality for a nonlinear specification of MSO variables, which has not been addressed by previous Australian studies (see for example, Craswell et al., 1997 and Welch, 2003).

3.5.2 ESO and performance

This study argues that different groups of managers have different incentives, and that the relationship between MSO and performance may vary depending on whether shares are owned by the executive or independent directors. Accordingly it also examines the relationship of ownership by the executive directors and performance. Panel A of Table 3.5 presents the results of OLS regression analysis. In the first regression performance is measured by Q. The significant P values of the coefficients ESO (0.003) and ESO^2 (0.000) suggest a nonlinear relationship between ESO and Q. However, the sign of the coefficient of ESO is negative (consistent with entrenchment) and ESO^2 is positive (consistent with incentive alignment). It implies that Q first decreases and then starts to increase when ESO increases after a certain point. It is also found that Q is positively related to investment (INV) and board independence (BIND), and negatively related to size

(ASST) and age of the firm (AGE). In the second regression performance is measured by earnings. Once again the coefficients of ESO variables are significant and their signs are also consistent with the first regression. The coefficients of the other variables, except size, do not show any substantive difference from the results in the Q regression.

To address the issue of endogeneity this study once again uses an IV regression. In Panel B the IV regression results present significant P values of the coefficients ESO (0.009) and ESO^2 (0.004). The results once again suggest a nonlinear relationship between ESO and Q. The coefficients of ESO and ESO^2 are negative and positive respectively. The results of the other variables remain qualitatively the same. The second regression reports the results of the ESO-earnings relationship. The reported results do not show any significant difference from the main findings.

In Panel C the results of the simultaneous equations system are presented. Once again it uses a system of three equations – Q, ESO and investment (INV). The results are reported in the second, third and fourth columns. The results of the Q regression support the previous findings of a nonlinear relationship between ESO and Q. The coefficients of other variables qualitatively remain unchanged. In the ESO regression the coefficient of Q shows a positive and significant (0.025) value. In other words, executive directors change their stakes in the firm based on the performance measured by Q. This also implies that the relationship between ESO and Q is bidirectional. The results of the investment (INV) regression suggest that ESO also affects investment. The same relationship is re-examined using earnings as

a performance measure. The results are reported in the last three columns of Table 3.5 in Panel C. The results of the ROA regression show significant P values for the coefficients of ESO (0.044) and ESO^2 (0.009). Once again it supports the previous findings of a nonlinear relationship between ESO and performance. The insignificant coefficient of ROA suggests that performance measured by earnings does not influence ESO. This is inconsistent with the findings of the ESO-Q relationship. The insignificant coefficients of the ESO variables from the investment (INV) regression suggest that ESO does not affect the level of investment.

Table 3.5: Relationship between ESO and performance

Panel A: OLS regression		
	Q	ROA
ESO	-1.515	-0.142
	(0.003)	(0.030)
ESO^2	3.205	0.467
	(0.000)	(0.000)
LEV	-0.069	-0.095
	(0.622)	(0.000)
INV	1.893	0.012
	(0.000)	(0.890)
USUBSP	-0.248	0.037
	(0.000)	(0.011)
BIND	0.254	0.019
	(0.087)	(0.401)
AGE	-0.131	-0.002
	(0.000)	(0.548)
ASST	-0.326	0.084
	(0.000)	(0.000)
Intercept	5.414	-0.706
	(0.000)	(0.000)
Adj. R^2	0.184	0.165
Panel B: IV regression		
ESO	-1.467	-0.282
	(0.009)	(0.004)
ESO^2	3.678	0.735
	(0.004)	(0.000)
LEV	-0.072	-0.096
	(0.611)	(0.000)
INV	3.446	0.073
	(0.000)	(0.714)
USUBSP	-0.189	0.059
	(0.257)	(0.128)
BIND	0.313	0.006
	(0.242)	(0.818)
AGE	-0.104	-0.003
	(0.000)	(0.217)
ASST	-0.242	0.077
	(0.000)	(0.000)
Intercept	4.289	-0.639
	(0.000)	(0.000)
Adj. R^2	0.140	0.154

(cont)

Table 3.5 (cont)

Panel C: Simultaneous equations system (3 SLS)

	Q	ESO	INV	ROA	ESO	INV
Q		0.015	0.019			
		(0.025)	(0.000)			
ROA					0.117	-0.144
					(0.380)	(0.058)
ESO	-1.489		0.106	-0.283		0.094
	(0.086)		(0.088)	(0.044)		(0.134)
ESO^2	3.716		-0.259	0.738		-0.188
	(0.034)		(0.045)	(0.009)		(0.154)
LEV	-0.071	-0.042		-0.096	-0.045	
	(0.557)	(0.005)		(0.000)	(0.003)	
INV	3.561	0.113		0.055	0.113	
	(0.000)	(0.304)		(0.686)	(0.362)	
USUBSP	-0.185			0.059		
	(0.325)			(0.249)		
BIND	0.298			0.006		
	(0.215)			(0.861)		
AGE	-0.102			-0.004		
	(0.026)			(0.577)		
ASST	-0.245			0.078		
	(0.000)			(0.000)		
VOL		-0.172	0.044		-0.119	0.123
		(0.221)	(0.331)		(0.393)	(0.005)
LIQ		0.058	0.049		0.055	0.188
		(0.029)	(0.002)		(0.661)	(0.006)
MVEQ		$-0.125X10^{-5}$			$-0.110X10^{-5}$	
		(0.006)			(0.015)	
Intercept	4.577	0.035	0.086	-0.655	0.055	0.113
	(0.000)	(0.236)	(0.000)	(0.000)	(0.043)	(0.000)
Adj. R^2	0.141	0.042	0.113	0.155	0.037	0.132

The above table reports the regression results regarding ESO and performance. Different notations used in the table are defined as follows: ESO = Percentage of ordinary shares owned by the executive directors of the board; Q = Tobin's Q, calculated as the sum of the book value of debt, preference shares and market value of equity to the book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and the book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of the number of years since the firm was listed on the ASX; ASST = Natural log of the book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

This study also estimates the turning points in the U-shaped relationship between ESO and performance reported in Table 3.5. Figure 3.2 presents the graph of the estimated relationship between ESO and performance measured by Q and ROA. The estimated turning point for ESO and Q is 19.9% and ESO and ROA is 19.2%.[35]

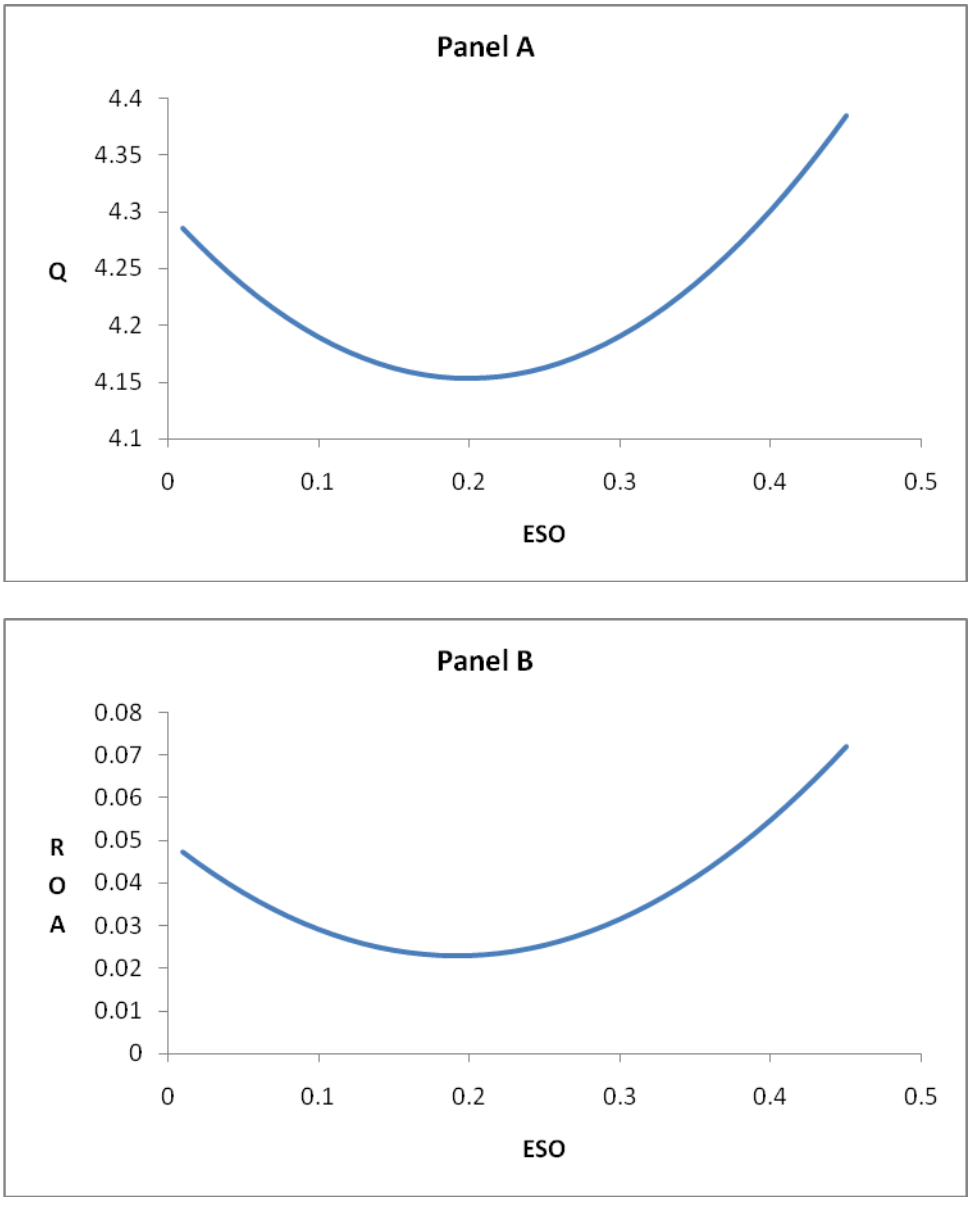

Figure 3.2: Relationship between ESO and performance

[35] The turning points are estimated using IV regression results presented in Panel B of Table 3.5.

3.5.3 ISO and performance

It is argued in Section 2.5 that the independent directors are more likely to be effective as monitors. Their concern for reputation as effective monitors suggests that they are not likely to be influenced by issues of incentive alignment or entrenchment, which may otherwise arise as a result of their share ownership. Hence this study expects no relationship between ISO and performance. It runs the same analysis for ISO that it runs for ESO. However, this study fails to document any significant relationship between ISO and performance measured by both Q and earnings using OLS and IV regressions. It also runs a simultaneous equations system (3 SLS). The simultaneous equation results suggest that neither ISO affects performance nor performance affects ISO.[36]

[36] This study also uses a linear specification of ISO to examine the same relationship and fails to find any significant results as well. The results are reported in Table A.11 in Appendix A.

Table 3.6: Relationship between ISO and performance

Panel A: OLS regression		
	Q	ROA
ISO	-0.355	-0.072
	(0.568)	(0.377)
ISO^2	0.812	0.143
	(0.538)	(0.337)
LEV	-0.064	-0.096
	(0.653)	(0.000)
INV	1.849	0.009
	(0.000)	(0.909)
USUBSP	-0.222	0.041
	(0.004)	(0.214)
BIND	0.213	0.017
	(0.072)	(0.523)
AGE	-0.113	-0.001
	(0.000)	(0.923)
ASST	-0.317	0.082
	(0.000)	(0.000)
Intercept	5.232	-0.697
	(0.000)	(0.000)
Adj. R^2	0.180	0.161
Panel B: IV regression		
ISO	-0.324	-0.219
	(0.688)	(0.653)
ISO^2	0.258	0.460
	(0.839)	(0.241)
LEV	-0.063	-0.097
	(0.658)	(0.004)
INV	3.261	0.101
	(0.000)	(0.624)
USUBSP	-0.159	0.064
	(0.335)	(0.133)
BIND	0.297	0.007
	(0.239)	(0.775)
AGE	-0.089	-0.001
	(0.000)	(0.889)
ASST	-0.241	0.076
	(0.000)	(0.000)
Intercept	4.225	-0.637
	(0.000)	(0.000)
Adj. R^2	0.139	0.146

(cont)

Table 3.6 (cont)

Panel C: Simultaneous equations system (3 SLS)

	Q	ISO	INV	ROA	ISO	INV
Q		0.006	0.019			
		(0.297)	(0.000)			
ROA					0.064	0.151
					(0.580)	(0.048)
ISO	-0.337		0.092	-0.209		0.085
	(0.876)		(0.301)	(0.279)		(0.344)
ISO^2	0.262		-0.201	0.429		-0.173
	(0.896)		(0.261)	(0.261)		(0.345)
LEV	-0.062	-0.009		-0.097	-0.010	
	(0.608)	(0.507)		(0.000)	(0.431)	
INV	3.373	-0.154		0.085	-0.163	
	(0.001)	(0.107)		(0.534)	(0.132)	
USUBSP	-0.152			0.064		
	(0.416)			(0.234)		
BIND	0.276			0.008		
	(0.267)			(0.834)		
AGE	-0.087			-0.001		
	(0.051)			(0.861)		
ASST	-0.243			0.077		
	(0.000)			(0.000)		
VOL		-0.085	0.045		-0.065	0.124
		(0.193)	(0.324)		(0.289)	(0.006)
LIQ		0.026	0.046		0.036	0.191
		(0.274)	(0.004)		(0.742)	(0.006)
MVEQ		$-0.592X10^{-5}$			$-0.530X10^{-5}$	
		(0.137)			(0.176)	
Intercept	4.489	0.025	0.089	-0.657	0.035	0.115
	(0.000)	(0.318)	(0.000)	(0.000)	(0.147)	(0.000)
Adj. R^2	0.140	0.028	0.107	0.147	0.026	0.125

The above table reports the regression results regarding ISO and performance. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; Q = Tobin's Q, calculated as the sum of the book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of the number of years since the firm was listed on the ASX; ASST = Natural log of the book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

3.5.4 Further analysis

This section explains the additional analyses that have been done to check the robustness of the results outlined in Section 3.5.1 to Section 3.5.3. The relevant results of further analysis are tabulated in Appendix A.

First, this study examines the relationship between managerial ownership variables and performance using two different definitions of Q and earnings. First, it uses market to book ratio defined as a proxy for firm performance. Second, it uses earnings before interests, tax and depreciation and amortisation scaled by the total assets (EBITDA). All the regressions presented in Tables 3.4 to 3.6 were rerun using these measures. This study documents the results consistent with the main findings. That is, the relationship between MSO and performance as well as ESO and performance is U-shaped. Additionally, there is no relationship between ISO and performance measured by market to book ratio and EBITDA. The results are presented in Table A.1 to Table A.3 in Appendix A.

Second, this study uses a different approach to examine the nonlinear relationship between all the managerial ownership variables and performance. Motivated by Morck et al. (1988) it uses a piecewise linear regression. Consistent with Morck et al. (1998) the breakpoints used in this study are 5% and 25%. The results for MSO suggest a negative significant coefficient for low levels of MSO (between 0% and 5%) when performance is measured by Q, with no significant relationship beyond that level. However, when performance is measured by ROA, a negative significant coefficient is found for low levels of MSO and a positive significant coefficient is found for the mid level (between 5% and 25%). The results

for ESO suggest a negative significant coefficient for low levels of ESO and a positive significant coefficient for the mid levels when performance is measured by Q. However, when performance is measured by ROA, none of the ESO variables are significant. The results of ISO regressions also show insignificant coefficients for ISO variables. The results of piecewise linear regressions are presented in Table A.4 in Appendix A.

Third, this study uses an alternative approach to control for the industry differences. In Australia there are a large number of resource companies and 24% of the sample companies are resource companies. This study uses a resource dummy variable for all the regressions presented in Tables 3.4 to 3.6. A negative significant coefficient has been found for the resource dummy variable. It implies that non-resource sample companies perform better than resource companies. However, the results for the managerial ownership variables (MSO, ESO and ISO) remain unchanged and suggest once again a U-shaped relationship between MSO and performance as well as ESO and performance, and no relationship between ISO and performance. The results are presented in Table A.5 to Table A.7 in Appendix A.

Fourth, a random effect model is used to address the possibility of a spurious relationship between the dependent and independent variables. This may arise due to the exclusion of unmeasured explanatory variables. Three different regressions have been rerun using a random effect model to examine the relationship between ownership by managers (MSO, ESO and ISO) and performance. The coefficients of MSO and ESO variables once again suggest a U-shaped relationship with performance. The coefficients of ISO variables, however, remain insignificant. That

is, this study does not find any substantive difference from the main findings. The results of random effect regressions are presented in Table A.8 in Appendix A.

Fifth, recognising that the levels of ISO may be too low to affect the incentives of the independent directors, this study also examines the impact of ownership on performance by all non-executive directors, that is, independent directors and affiliated (grey) directors.[37] All the regressions that are used for ISO in Table 3.6 are also run for non-executive director share ownership. The results presented in Table A.9 in Appendix A suggest that there is no relationship between ownership by the non-executive directors and either Q or earnings.

Finally, it may be argued that contemporaneous relationships are not appropriate to examine a causal relationship between managerial ownership and performance, given the time managers need to improve performance. Accordingly, this study lags all the managerial ownership variables (MSO, ESO and ISO) by one year to allow for the effect of any change in managerial ownership structure to show up in firm behaviour and performance. The coefficient of MSO is negative and MSO^2 is positive in the MSO-performance relationship. It implies a U-shaped relationship. A similar pattern of relationships have been documented for ESO. However, for ISO the coefficients are insignificant. This is consistent with the main findings of this study. The results are presented in Table A.10 in Appendix A.

[37] The mean level share ownership by all non-executive directors in the sample is 6.2% in contrast to 6.5% owned by executive directors.

3.6 CHAPTER SUMMARY

This study examines the relationship between MSO and firm performance measured by Tobin's Q and earnings. It is argued that Australian institutional characteristics that are markedly different from the US and UK, can impact upon the examination of the relationship between MSO and performance. It also posits that executive directors and independent directors have different ownership-performance incentives. Therefore, this study also examines the MSO-performance relationship for ESO and ISO separately.

This study finds a nonlinear U-shaped relationship between MSO and performance, both before and after controlling for endogeneity and reverse-causality. It also documents a bidirectional relationship between MSO and performance. However, such a bidirectional relationship is significant only for Q but not for earnings. The results in respect of ESO-performance show a similar relationship as is documented for MSO-performance as a whole. However, as posited this study does not find any significant relationship between ISO and performance.

One of the performance measures used in this chapter is earnings. As earnings as a performance measure may be affected by discretionary accruals, the use of an accruals adjusted performance measure is appropriate. Therefore, Chapter 4 of this thesis examines the relationship between MSO and discretionary accruals as well as the relationship between MSO and accrual adjusted earnings.

CHAPTER 4

MANAGERIAL SHARE OWNERSHIP, DISCRETIONARY ACCRUALS AND ADJUSTED EARNINGS

4.1 INTRODUCTION

It is argued that increased levels of MSO in a firm help to align the interests of owners and managers, therefore mitigating agency problems (Jensen and Meckling, 1976). Arguing that such incentive alignment has contracting implications, Warfield et al. (1995) posit that corporate stakeholders impose more restrictive contractual constraints denominated in accounting numbers as MSO and therefore, incentive alignment declines. The presence of accounting based constraints in turn provides managers with incentives to use accounting discretion to help alleviate these constraints. Related to this, Warfield et al. (1995) find an inverse relationship between the level of MSO and the level of discretionary accruals. Therefore, earnings used as a performance measure in Chapter 3 may be influenced by discretionary accruals, which in turn could impact the MSO-earnings relationship. Accordingly this chapter examines the relationship between MSO and discretionary accruals as well as MSO and earnings adjusted for discretionary accruals.

This chapter has two parts. The first part examines the relationship between MSO and discretionary accruals, and addresses two research questions. First, whether there is a causal relationship between MSO and discretionary accruals. Second, whether such a relationship depends on whether the shares are owned by the executive or independent directors of the firm. The second part of this chapter once again examines the relationship between MSO and performance, but using a new measure – adjusted earnings. The research questions addressed in Chapter 3 are re-examined to test whether the previously documented nonlinear U-shaped relationships between MSO as well as ESO and earnings hold when the issue of discretionary accruals is addressed and accruals adjusted earnings is used as a measure of firm performance.

Warfield et al. (1995) argue that the contractual constraints, designed to align interests and/or reduce the potential for opportunistic behaviour, are likely to be systematically associated with the level of MSO, and they find that the level of MSO has a negative impact on earnings management measured by discretionary accruals. Thus, in the second empirical study it is argued that earnings as a performance measure could be affected by discretionary accruals. This study is motivated as follows. First, no previous study has examined the relationship between MSO and discretionary accruals in Australia. Given that Australian institutional features are markedly different from the US and UK, there is no reason to believe that the results from studies such as Warfield et al. (1995) will hold in Australia.[38] Second, once again given that the executive directors could be more sensitive to incentive

[38] See Section 1.3.1 for a more detailed discussion.

alignment and entrenchment as well as contractual constraints in comparison to the independent directors, it is necessary to separately consider the impact of ESO and ISO on discretionary accruals. Third, no previous study that examined the relationship between MSO and earnings as a performance measure addresses the issue of discretionary accruals. Given that discretionary accruals could influence the level of earnings, using adjusted earnings as a measure of performance may be more appropriate.[39]

The remainder of this chapter is structured as follows. Section 4.2 discusses the relevant literature. Section 4.3 explains the theory development and research propositions. This is followed by an outline of the research design in Section 4.4. The results are discussed in Section 4.5 and Section 4.6 presents the chapter summary.

4.2 LITERATURE REVIEW

There has been extensive research on earnings management, which suggests that managers have numerous market and/or contract driven incentives to manage earnings, and discretionary accruals are a commonly used proxy for earnings management (see more details in Healy and Wahlen, 1999; Dechow et al., 1995). As the first part of this chapter focuses on the relationship between MSO and discretionary accruals, this section provides an overview of the literature examining possible motives to manage earnings, with a particular focus on contracting motives and research relating to the MSO-discretionary accruals relationship. The literature

[39] Cornett et al. (2008) also use this approach but on the broader corporate governance-performance relationship and show that the estimated impact of corporate governance variables is much stronger on operating performance when discretionary accruals are removed from reported earnings.

relating to the second part of this chapter, the MSO-performance relationship, has already been reviewed in Section 3.2.

4.2.1 Earnings management – An overview

Earnings management has been defined as:

> *"… a purposeful intervention in the external financial reporting process with the intent of obtaining some private gain (as opposed to say, merely, facilitating the neutral operation of the process)."* Schipper (1989, p.92)

The prior research on earnings management suggests that managers have incentives to manage reported earnings for their own benefits (Healy and Wahlen, 1999; Dechow and Skinner, 2000). In their review article, Healey and Wahlen (1999) outline possible motives that managers may have to manage earnings. They contend that managers may manage earnings prior to share issues to increase their compensation through bonus plans, to avoid breaching debt covenants and for regulatory purposes.

i) Capital market motives

Extant research suggests that managers have strong incentives to avoid reporting earnings decreases and losses. DeAngelo et al. (1996) document that firms which break a pattern of consistent earnings growth, experience an average of 14% negative abnormal return in the year the pattern is broken. Similarly, firms with a consistent pattern of earnings increases have higher price-to-earnings multiples (Barth et al., 1999). There are also studies that find that earnings are managed to meet the expectations of financial analysts' forecasts or management expectations. For example, Burgstahler and Eames (2003) find that managers take actions to manage earnings upward to avoid reporting earnings that are lower than analysts'

expectations. Kasznik (1999) finds that firms, failing to meet management earnings forecasts, use unexpected accruals to manage earnings upward.

ii) Contracting motives

A number of studies have examined actual compensation contracts to identify managers' earnings management incentives. Overall, the evidence reported in these studies is consistent with managers using accounting judgment to increase earnings-based bonus awards. For example, Healy (1985) finds that firms with bonus plans are more likely to report accruals that defer income when the bonus target is met. He also finds that changes in accounting procedures are related to the modification of a bonus plan. Guidry et al. (1999) use business unit level data rather than firm level data and find evidence consistent with Healey's bonus manipulation effects. Holthausen et al. (1995) also find that managers may use accruals to shift earnings over time, with the goal of maximising long term bonus income. Previous research suggests that earnings can be managed when firms are closed to breaching covenants in debt contracts. For example, DeFond and Jiambalvo (1994) find that firms accelerate earnings through abnormal total and working capital accruals prior to the year of debt covenant violation. Sweeney (1994) also finds that debt covenant violators use income-increasing accounting changes, but these usually take place after the violation. Her finding indicates that the sample firms did not make accounting changes, specifically to avoid violating the lending covenant; they might, however, make the changes to reduce the likelihood of future covenant violations.

iii) Regulatory motives

Prior research finds that managers may also manage earnings to mitigate regulatory constraints (see for example, Moyer, 1990; Scholes et al., 1990; Beatty et al., 1995; Collins et al., 1995). For example, banking regulations require that banks maintain a minimum amount of capital that is expressed in terms of accounting numbers. Banks that are closed to minimum capital requirements make accounting adjustments to loan loss provisions, loan write-offs and securities gains and losses (Moyer, 1990; Scholes et al., 1990). Similarly, earnings may be managed to avoid political costs.[40] For example, Han and Wang (1998) find that oil companies that expected to profit from the Persian Gulf crisis in 1990 used accruals to reduce their reported quarterly earnings. Their findings suggest that the benefit of disclosing large earnings increases, may be outweighed by the political costs in a politically sensitive period associated with the timely release of accounting information.[41]

4.2.2 MSO and discretionary accruals

MSO, one of the internal governance mechanisms to address agency problems, can inversely affect the magnitude of discretionary accruals due to the incentive alignment (Warfield et al., 1995). Warfield et al. (1995) argue that because of separation of ownership and control between owners and managers, contracts often contain accounting-based constraints to restrict the managers from engaging in value-reducing behaviour. The presence of accounting based constraints in turn provides managers with incentives to use accounting discretion to help circumvent these constraints. They contend that when MSO is low, the increased demand for

[40] According to Watts and Zimmerman (1978), political costs include all costs imposed on a firm such as potential adverse political actions involving taxes, tariffs, government subsidies etc.
[41] Political costs for oil firms during the Persian Gulf crisis included the possibility of federal or state control on oil prices and the renewal of windfall profits tax or some other excessive profits tax.

accounting-based constraints may motivate the managers to choose the accounting policies to mitigate the accounting-based contractual restrictions. Consistent with their hypothesis, they find a negative relationship between MSO and the magnitude of discretionary accruals in the US.

Gabrielsen et al. (2002) examine the same relationship for a sample of Danish firms, to extend the findings of Warfield et al. (1995) in a different institutional setting. They fail to find any statistically significant relationship between MSO and discretionary accruals (absolute value), and argue that their results are likely attributable to different institutional arrangements that exist in the US and Denmark.

Warfield et al. (1995) posit that corporate stakeholders impose more restrictive contractual constraints denominated in accounting numbers as MSO and therefore, incentive alignment declines. An alternative theoretical argument, not considered by Warfield et al. (1995), is that high MSO may result in managerial entrenchment (Demsetz, 1983; Fama and Jensen, 1983). The combination of incentive alignment and entrenchment may suggest a nonlinear relationship between MSO and discretionary accruals. Accordingly Yeo et al. (2002) examine the nonlinear relationship between MSO and income increasing discretionary accruals for the firms listed on the Singapore stock exchange. They find that at low levels of MSO, the level of income increasing discretionary accruals has a negative relationship with the management ownership, consistent with the incentive alignment argument. However, at higher levels of MSO the relationship reverses suggesting that the entrenchment effect might have set in.

4.2.3 Accruals adjusted earnings as performance measure

Cornett et al. (2008) consider the effect of managerial compensation packages and corporate governance on firm performance, when performance is adjusted for the impact of earnings management. They measure earnings management by discretionary accruals and find that corporate governance mechanisms effectively constrain discretion in earnings management, and that the estimated impact of governance variables on corporate performance is far stronger when discretionary accruals are removed from reported earnings. In view of the above, it is argued that earnings as a performance measure may be influenced by discretionary accruals and that the earlier use of earnings as a performance measure in Chapter 3, may be problematic.

4.3 THEORY DEVELOPMENT AND RESEARCH PROPOSITIONS

It was discussed in Section 2.4.1 that increased levels of MSO in a firm helps to align the interests of owners and managers, therefore mitigating agency problems (Jensen and Meckling, 1976). Arguing that such incentive alignment has contracting implications, Warfield et al. (1995) posit that corporate stakeholders impose more restrictive contractual constraints denominated in accounting numbers as MSO and therefore, incentive alignment declines. An alternative theoretical argument outlined in Section 2.4.2, not considered by Warfield et al. (1995), is that high MSO may result in managerial entrenchment (Demsetz, 1983; Fama and Jensen, 1983). The potential for entrenchment as MSO increases may also have contracting implications. Hence the initial theory largely developed in the ownership-performance literature, would suggest a negative relationship between MSO and discretionary accruals consistent with incentive alignment up to some turning point,

followed by a positive relationship when the costs associated with entrenchment exceed the incentive benefits of managerial ownership (see for example, Morck et al., 1988; McConnell and Servaes, 1990). It is also possible that the previously discussed wider corporate governance system in Section 1.3.1 may have an effect on the relationship between MSO and discretionary accruals. For example, managerial entrenchment effects associated with "practical control" may take place at lower levels of ownership in Australia.

Warfield et al. (1995) argue that there is a systematic relationship between MSO and the levels of discretionary accruals, and find an inverse relationship between the levels of MSO and discretionary accruals in the US. They argue that firms with low MSO are subject to more accounting based contractual constraints since stakeholders perceive a lack of incentive alignment. These contractual provisions in turn provide incentives for managers to use accrual adjustments to circumvent such constraints. Whilst, Yeo et al. (2002) report similar results to Warfield et al. (1995) at low levels of MSO, they show that at higher levels of MSO the relationship reverses, suggesting that stakeholders contracting with firms recognise the potential for managerial entrenchment and contract accordingly.

Theory suggests some combination of incentive alignment and entrenchment effects and therefore, a nonlinear relationship between MSO and discretionary accruals. Prior studies that identify an entrenchment effect in the ownership-performance literature document it commencing at varying levels – for example, MSO of 5% in the US (Morck et al., 1988) and 7% in the UK (Davies et al., 2005). Yeo et al. (2002) report an entrenchment effect commencing at an MSO of 25%

when examining the ownership-discretionary accruals relationship in Singapore. It was previously argued that features of the wider corporate governance system may mean that managers may achieve 'practical control' at relatively low levels of MSO in Australia. Accordingly, whilst a precise pattern is hard to predict, it is posited in this study that entrenchment effects are likely to be present at lower levels of the MSO-discretionary accruals relationship than previously documented.

Previous research in this area does not differentiate between the roles of the managers owning shares. As discussed in Section 2.5, executive directors and non-executive directors (particularly the independent directors) are likely to have different incentives as will the effect of their share ownership. Executive directors are more closely involved in the operations of the business and it is likely that their reputational capital is more closely tied to their value maximising activities, including strategic as well as operational decisions. Hence it is argued that for any given level of share ownership, executive directors, in comparison to independent directors, are more susceptible to the effects of incentive alignment and entrenchment.

On the other hand, it is argued that the economics of the managerial labour market provide incentives for the independent directors to be effective monitors in order to enhance their reputation and the value of their human capital (Fama and Jensen, 1983). Similarly, Gilson (1990) asserts that, whilst inside directors are also managers of the firms, outside directors have no continuing professional relationship with the firm other than as directors, and are responsible for monitoring the management. Future directorships may be a function of the reputation they develop

as effective monitors. In the case of independent directors, concern for their reputation as effective monitors is likely to outweigh any issue relating to incentive alignment or entrenchment that may otherwise arise as a result of owning shares in the firm. Accordingly this study expects the relationship between executive directors' share ownership and discretionary accruals to be as posited in the case of managerial share ownership as a whole, but it expects no relationship between independent directors' share ownership and discretionary accruals.

For the reasons discussed in Section 3.3 of this thesis, this study also posits a similar relationship for the managerial share ownership and adjusted earnings as for managerial share ownership and performance measured by Q and earnings in Chapter 3. That is, it expects a nonlinear relationship between MSO as well as ESO and adjusted earnings, and no relationship between ISO and adjusted earnings. Consistent with Chapter 3 it is also posited that entrenchment effects are likely to be present at lower levels of MSO than previously documented for the MSO-performance relationship measured by adjusted earnings.

4.4 RESEARCH DESIGN

4.4.1 Data

This study uses the same dataset as described in Section 3.4.1. In summary, this study identifies the top 300 Australian firms by market capitalisation at two dates, 30 June 1999 and 30 June 2006. Consistent with prior literature, it once again excludes banks, financial institutions, trusts and utility firms (49 firms) which have different disclosure requirements and/or different corporate governance structures. Another 46 firms have been excluded due to the unavailability of corporate

governance and control variables data. Additionally this study excludes another 13 firms due to the unavailability of sales/operating revenue to use the accruals estimation model. The final sample is comprised of the remaining firms, with a total of 1154 firm-year observations over the seven year period.[42] As evident in Table 4.1 the sample firms belong to 21 Global Industrial Classification Standard Sectors (GICS) Industry Groups in 8 industrial sectors.

Once again the required accounting information has been collected from Aspect Fin Analysis and Connect 4 databases. The ownership and other corporate governance data was hand collected from the corporate governance disclosures, shareholding information and directors' reports contained in annual reports.

Table 4.1: Sample

Panel A: Sample selection	
Number of firms	300
Less:	
Financial and utility companies	49
Companies without necessary information for corporate governance and control variable data	63
Total	188

(cont)

[42] The final sample consists of 1173 firm-year observations. However, some outliers have been trimmed based on MSO and discretionary accruals by excluding any observation that is above or below the mean $\pm$ 3 standard deviations.

Table 4.1 (cont)

Panel B : Analysis of sample by GICS sectors and industries

GICS sector	**GICS industry group**	
Material	Chemicals	3
	Construction material	5
	Metal & mining	22
	Paper & forest products	6
Industrial	Capital goods	16
	Commercial service & supplies	9
	Transportation	5
Health care	Health care equipment & supplies	10
	Health care providers & services	6
	Pharmaceutical, biotechnology & life science	8
Telecommunication	Diversified telecommunication	4
Consumer staples	Food & staple retailing	5
	Food, beverage & tobacco	15
Consumer discretionary	Automobiles & components	7
	Consumer durables & apparels	6
	Consumer services	11
	Media	17
	Retailing	10
Information technology	Software & services	7
	Technology hardware & equipment	6
Energy	Oil and gas	10
Total		188

Table 4.2 reports the descriptive statistics. The descriptive statistics of the key variables are very similar to those presented in Table 3.2. The slight variation results from a slightly different sample used in this study. It also presents some new variables. For example, it shows that the average DACC is 0.02; the average adjusted ROA (AROA) is 0.04.

Table 4.2: Descriptive statistics

	Mean	Median	Stdev	Q1	Q3
MSO (%)	12.535	2.398	18.373	0.211	18.776
ESO (%)	6.341	0.241	13.164	0.025	3.123
ISO (%)	1.987	0.117	7.293	0.024	0.771
USUBSP (%)	37.106	34.61	22.547	18.75	54.63
DACC	0.016	0.009	0.099	-0.033	0.044
ROA	0.059	0.056	0.079	0.034	0.086
AROA	0.043	0.053	0.127	0.004	0.107
LEV	0.244	0.235	0.247	0.114	0.332
ASST	8.578	8.774	0.716	8.283	9.271
MB	3.545	2.520	3.441	1.48	4.67
LIQ	0.093	0.089	0.099	0.051	0.137
VOL	0.029	0.016	0.047	0.009	0.029

The above table report descriptive statistics. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; DACC = Discretionary accruals, calculated as the discretionary accruals as per Chan et al. model scaled by the book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; AROA = ROA – DACC; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; LEV = Leverage, calculated as the ratio of the book value of debt and book value of total assets; ASST = Book value of assets, MB = Market to book ratio; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; VOL= Volatility of earnings calculated as standard deviation of earnings of preceding five years scaled by book value of assets.

Table 4.3 presents the correlation matrix using Pearson correlation. The correlation matrices of the key variables are also very similar to those presented in Table 3.2. Once again the slight variation results from a slightly different sample that this study uses. The table also presents the correlations among some new variables. For example, DACC is positive and significantly correlated with MSO and ESO. The larger firms are also more likely to have big 4 auditors. A negative correlation between MSO and the auditor variable indicates that directors have greater equity interests in the firms audited by non-big 4 audit firms. LOSS is positive and significantly correlated with DACC. It suggests that firms incurring loss have greater discretionary accruals.

Table 4.3: Correlation matrix

	DACC	AUD	ESO	ISO	LEV	ASST	LOSS	LTACC	MSO	USUBSP	BIND	MB
DACC	1.000											
AUD	**-0.052**	1.000										
ESO	**0.107**	**-0.128**	1.000									
ISO	-0.009	**-0.074**	**-0.052**	1.000								
LEV	0.039	**0.063**	**-0.083**	-0.014	1.000							
ASST	**-0.201**	**0.153**	**-0.183**	-0.023	**0.263**	1.000						
LOSS	**0.116**	0.011	0.017	0.036	**-0.104**	**-0.321**	1.000					
LTACC	-0.042	**-0.054**	**0.088**	0.046	**0.064**	-0.030	-0.023	1.000				
MSO	**0.118**	**-0.138**	**0.670**	**0.587**	-0.042	**-0.192**	**0.088**	**0.100**	1.000			
USUBSP	-0.032	-0.009	0.022	0.003	0.006	-0.013	**-0.059**	**0.050**	0.026	1.000		
BIND	**-0.084**	**0.053**	**-0.021**	-0.033	-0.012	0.132	0.031	0.025	-0.009	0.094	1.000	
MB	0.025	**-0.068**	**0.116**	-0.018	-0.004	**0.058**	**-0.175**	0.007	0.035	-0.001	-0.025	1.000

The above table reports correlation matrix. Different notations used in the table are defined as follows: DACC = Discretionary accruals, calculated as the discretionary accruals as per the Chan et al. model scaled by the book value of assets; AUD = dummy variable 1 if the firm is audited by big 4 auditors; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; LEV = Leverage, calculated as the ratio of the book value of debt and book value of total assets; ASST = Natural log of the book value of assets; LOSS = Loss dummy variable ; LTACC = Lagged total accruals; MSO = Percentage of ordinary shares owned by the directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; MB = Market to book ratio. Bold text indicates significant coefficient.

4.4.2 Measuring discretionary accruals

The most commonly used model to estimate discretionary accrual is the modified Jones model. Previous studies have used either a time series or cross sectional version of the modified Jones model. The time series version of the modified Jones is data intensive. Similarly, a problem with using the cross sectional model is that some of the industries classified under the two digit ASX code do not have ten observations (firms). Accordingly, using these models would have resulted in a considerable reduction of the sample size. Hence this study uses a parsimonious model used by Chan et al. (2006) to estimate discretionary accruals.[43] The model is:

$$E_t(TACC_{it}) = \frac{\sum_{k=1}^{5} TACC_{it-k}}{\sum_{k=1}^{5} Sales_{it-k}} Sales_{it} \qquad \textbf{(4.1)}$$

Where:

$E_t(TACC_{it})$ = Expected total accruals of firm i in year t;

$TACC_{it-k}$ = Total accruals[44] of firm i in year t-k;

$Sales_{it-k}$ = Sales revenue of firm i in year t-k.

Discretionary accrual is then given by

$$DACC_{it} = TACC_{it} - E_t(TACC_{it}) \qquad \textbf{(4.2)}$$

[43]As further analysis, this study also uses the model in Warfield et al. (1995) to estimate discretionary accruals.

[44]Total accruals = $\Delta CA - \Delta CL - DEP$, where ΔCA is the change in non-cash current assets (change in current assets less change in cash), ΔCL is the change in current liabilities excluding short term debt (change in current liabilities less the change in debt included in current liabilities, and minus the changes in income tax payable) and DEP is depreciation and amortisation (Chan et al., 2006).

Where:

$DACC_{it}$ = Discretionary accruals of firm i in year t; $TACC_{it}$ = Total accruals of firm i in year t; $E_t(TACC_{it})$ = Expected total accruals of firm i in year t.

The level of total accruals has been related to current sales. To smooth any kind of transitory fluctuations, the proportion as the ratio of a moving average of the past five years total accruals to a moving average of sales has been estimated. The discretionary component is estimated by taking the difference between actual and estimated total accruals as calculated in Equation (4.2).

4.4.3 Model specification

Consistent with Warfield et al. (1995) this study examines the relationship between MSO and discretionary accruals using an OLS regression.[45] However, to examine the relationship between MSO and performance measured by adjusted earnings, it once again uses three regression techniques: OLS regression (Demsetz and Lehn, 1985), IV regression (Hermalin and Weisbach, 1991) and the three-stage least squares (3 SLS) simultaneous equations system (Cho, 1998). Three different types of managerial ownership variables have been used; they are MSO, ESO, and ISO. Consistent with the posited MSO-discretionary accruals relationship outlined in Section 4.3, this study uses a quadratic specification in reagrds to all MSO variables (see for example, Yeo et al., 2002).

[45] Firms with larger and/or less reliable accruals and/or greater earnings volatility may choose governance structures, such as higher levels of MSO, to reduce agency costs. That is, MSO can be endogenously determined. To address this potential problem, this study uses an IV regression procedure to re-estimate Equation (4.3). The results are presented in Table B.7 in Appendix B.

i) MSO and discretionary accruals: OLS model

The following equation has been used to examine the relationship between MSO and discretionary accruals using an OLS regression.

$$\text{Discretionary Accruals} = \beta_0 + \beta_1(\text{MSO}) + \beta_2 (\text{MSO})^2 + \beta_3(\text{Unaffiliated shareholdings}) + \beta_4(\text{Leverage}) + \beta_5(\text{Board independence}) + \beta_6(\text{Big 4 auditor dummy}) + \beta_7(\text{Market to book}) + \beta_8(\text{Lagged total accruals}) + \beta_9(\text{Loss dummy}) + \beta_{10}(\text{Size}) + \beta_{11to17}(\text{GICS Sectoral dummies}) + \beta_{18to23}(\text{Year dummies}) + \varepsilon \quad \textbf{(4.3)}$$

The dependent variable used in the above regression is an absolute value of discretionary accruals estimated as per Chan et al.'s (2006) model specified in Equation (4.1). This study largely follows previous research and introduces different control variables (Warfield et al., 1995; Koh, 2003). The control variables used in the above model are unaffiliated substantial shareholdings, leverage, board independence, auditor, market to book ratio, lagged total accruals, loss and size of the firms; it also controls for the GICS industrial sectors and years.

This study includes ownership by the unaffiliated substantial shareholders to control for the monitoring effect (Peasnell et al., 2005). Unaffiliated shareholdings are measured by the percentage of share ownership by unaffiliated substantial shareholders (other than directors). Managers have incentives to use accounting discretion when they are close to the debt covenant violation (Klein, 2002). Leverage can capture such incentives. This study measures leverage by the ratio of book value of debt and book value of total assets. Board independence can have a monitoring effect, thereby constraining the earnings management (Klein, 2002), and is estimated by the proportion of independent directors on the board. Previous research suggests that large audit firms (proxied by big 4) are considered to be more

effective monitors of the financial reporting process compared to the smaller firms (Francis and Krishnan, 1999; Francis et al., 1999). Therefore, a dummy variable is used to control for the effect of auditor on the level of earnings management. Following previous studies, this study takes market to book ratio as one of the control variables, and measures as the market value of equity divided by the book value of shareholders' equity (Klein, 2002; Davidson et al., 2005). Accruals are mean reverting, with the majority of the mean reversion occurring within a year (Dechow, 1994; Dechow et al., 1995; Sloan, 1996). A high level of lagged total accruals will probably reduce managers' ability to manage current period reported earnings upward and vice versa. Therefore, this study controls for the total accruals of the previous period. Firms with negative earnings are associated with greater discretionary accruals (Wang, 2006). Hence it uses a dummy variable when a firm has negative earnings in a particular year. Finally, it follows previous studies and controls for firm size by taking a natural log of the book value of assets (see for example, Klein, 2002; Wang, 2006).

ii) MSO and adjusted earnings: OLS, IV and the simultaneous equations system

The equations used to examine the relationship between MSO and performance are identical to those specified in Equations (3.1), (3.2) and (3.3) in Chapter 3.

The key variable of interest is performance measured by adjusted earnings. Hence in all the equations performance is measured by adjusted earnings. The definition of earnings is: net earnings after tax (before abnormal items) scaled by the book value of assets (ROA). Consistent with Cornett et al. (2008) this study

excludes discretionary accruals from the aforementioned earnings measure to obtain adjusted net earnings after tax (before abnormal items) (AROA).[46] The details of the other variables in the equations have been explained in Section 3.4.2.

4.5 RESULTS

4.5.1 MSO and discretionary accruals

Table 4.4 presents the estimation of OLS regression results. The first regression examines the relationship between MSO and the absolute value of discretionary accruals. This study finds significant P values of the coefficients MSO (0.004) and MSO^2 (0.007). The signs of MSO and MSO^2 are positive and negative, respectively. In other words, it finds a positive relationship between MSO and discretionary accruals up to a certain point followed by a negative relationship. It implies an inverse U-shaped, relationship between MSO and the absolute value of discretionary accruals. The positive relationship between MSO and discretionary accruals suggests that in Australia an entrenchment effect sets in at lower levels of ownership. After a certain level of ownership is attained, a relationship consistent with incentive alignment is found. The fact that the coefficients of some other control variables are statistically significant, suggests that discretionary accruals are also influenced by other factors. Specifically, discretionary accruals are positively related to loss (LOSS) and leverage (LEV), and negatively related to board independence (BIND) and firm size (ASST). All other control variables are insignificant. A positive significant coefficient of loss (LOSS) is consistent with the findings of Wang (2006). A positive significant coefficient of leverage (LEV)

[46] As a part of the robustness tests and consistent with section 3.5.4, earnings before interests, tax and depreciation and amortisation, scaled by the total assets (EBITDA) excluding discretionary accruals, is also used to measure adjusted earnings. The results are presented in Table B.18 to B.20 in Appendix B.

implies that managers may manage earnings in highly levered firms (Klein, 2002). The negative significant coefficient of board independence (BIND) suggests that the monitoring effect constrains the use of discretionary accruals.

The sample firm-years are also divided into two sub-samples according to the sign of the discretionary accruals, and for each sub-sample this study regresses the absolute value of the discretionary accruals on MSO and control variables. The regression results are presented in the same table. Observations with positive (negative) discretionary accruals are consistent with income-increasing (income-decreasing) accrual adjustments, and $DACC_{+ve}$ ($DACC_{-ve}$) indicates the absolute value for positive (negative) discretionary accruals.[47] For the $DACC_{+ve}$ regression, all coefficients of the MSO variables are statistically significant with the expected signs, that is, consistent with the main regression. For the $DACC_{-ve}$ regression, all coefficients of the MSO variables have the expected signs, but the coefficients of the MSO variables are not statistically significant. Taken together, this suggests that MSO is significantly associated with income-increasing but not income-decreasing accrual adjustments. The difference in relationships is consistent with managerial opportunism and the contracting argument posited in this chapter.

[47] The number of observations for the income increasing discretionary accruals and income decreasing discretionary accruals are 736 and 437 respectively.

Table 4.4: Relationship between MSO and discretionary accruals

	DACC	$DACC_{+ve}$	$DACC_{-ve}$
MSO	0.077	0.104	0.031
	(0.004)	(0.005)	(0.255)
MSO^2	-0.091	-0.121	-0.042
	(0.007)	(0.005)	(0.412)
USUBSP	-0.010	-0.006	-0.014
	(0.845)	(0.579)	(0.196)
LEV	0.001	0.002	0.006
	(0.086)	(0.078)	(0.716)
BIND	-0.016	-0.010	-0.014
	(0.042)	(0.019)	(0.034)
AUD	-0.001	-0.001	-0.001
	(0.845)	(0.828)	(0.803)
MB	$0.280X10^{-4}$	0.001	-0.002
	(0.194)	(0.085)	(0.009)
LTACC	-0.024	-0.067	0.012
	(0.079)	(0.003)	(0.643)
LOSS	0.013	0.036	-0.017
	(0.013)	(0.000)	(0.168)
ASST	-0.012	-0.009	-0.015
	(0.005)	(0.024)	(0.000)
Intercept	0.156	0.128	0.205
	(0.000)	(0.001)	(0.000)
Adj. R^2	0.064	0.089	0.069

The above table reports the regression results regarding MSO and discretionary accruals. Different notations used in the table are defined as follows: DACC = Absolute value of discretionary accruals; $DACC_{+ve}$ = Absolute value of income increasing discretionary accruals; $DACC_{-ve}$ = Absolute value of income decreasing discretionary accruals; MSO = Percentage of ordinary shares owned by the directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of the book value of debt to book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable; ASST = Natural log of the book value of assets. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

The turning points in the inverse U-shaped relationship between MSO and discretionary accruals reported in Table 4.4 can also be estimated. Figure 4.1 presents the graph of the estimated relationship between MSO and discretionary accruals. The estimated turning point for MSO and discretionary accruals is 42.3%. This turning point suggests that in Australia, a positive MSO-discretionary accruals relationship dominates at lower levels of ownership. After the level of MSO reaches 42.3%, a negative relationship consistent with incentive alignment can be seen.

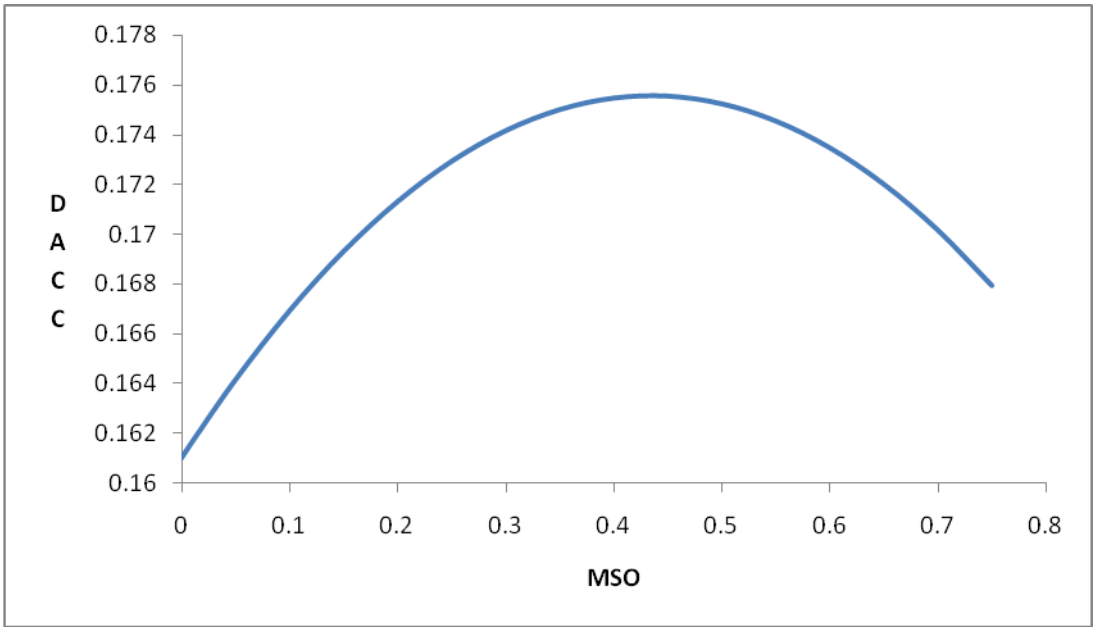

Figure 4.1: Relationship between MSO and discretionary accruals

4.5.2 ESO and discretionary accruals

It was argued that different groups of managers have different incentives, and the relationship between MSO and discretionary accruals may vary depending on whether shares are owned by the executive or independent directors. Therefore, this study examines the relationship between ESO and discretionary accruals. The results are presented in Table 4.5. The first regression examines the relationship between

ESO and the absolute value of discretionary accruals. It shows significant P values of the coefficients ESO (0.022) and ESO^2 (0.083). The signs of ESO and ESO^2 are positive and negative respectively, which implies an inverse U-shaped relationship between ESO and discretionary accruals. The positive (negative) relationship between ESO and discretionary accruals implies an entrenchment (incentive alignment) effect. Once again, the empirical findings suggest that an entrenchment effect dominates at lower levels of executive director ownership. After a certain level of ownership is attained, a relationship is found consistent with incentive alignment. The significant coefficients of some of the control variables suggest that discretionary accruals are also influenced by other factors. That is, discretionary accruals are positively related to loss (LOSS) and negatively related to board independence (BIND) and firm size (ASST).

Once again, the sample firm-years are also divided into two sub-samples according to the sign of the discretionary accruals and the analysis is replicated. For the $DACC_{+ve}$ regression it is found that all the coefficients of the ESO variables are statistically significant with the expected signs, that is, consistent with the results for ESO as a whole. However, the coefficients for the ESO variables in the $DACC_{-ve}$ regression are not significant. Thus ESO is also associated with income-increasing but not income-decreasing accruals.

Table 4.5: Relationship between ESO and discretionary accruals

	DACC	$DACC_{+ve}$	$DACC_{-ve}$
ESO	0.035	0.023	0.021
	(0.022)	(0.035)	(0.699)
ESO^2	-0.063	-0.032	-0.031
	(0.083)	(0.087)	(0.937)
USUBSP	-0.009	-0.005	-0.015
	(0.258)	(0.678)	(0.225)
LEV	0.002	0.003	-0.005
	(0.737)	(0.604)	(0.728)
BIND	-0.012	-0.004	-0.014
	(0.088)	(0.053)	(0.415)
AUD	-0.001	-0.001	-0.001
	(0.232)	(0.834)	(0.805)
MB	$0.419X10^{-4}$	0.001	-0.002
	(0.184)	(0.202)	(0.011)
LTACC	-0.022	-0.065	0.013
	(0.235)	(0.007)	(0.629)
LOSS	0.015	0.039	-0.017
	(0.092)	(0.000)	(0.154)
ASST	-0.012	-0.009	-0.015
	(0.011)	(0.063)	(0.001)
Intercept	0.164	0.136	0.206
	(0.000)	(0.001)	(0.000)
Adj. R^2	0.061	0.076	0.069

The above table reports the regression results regarding ESO and discretionary accruals. Different notations used in the table are defined as follows: DACC = Absolute value of discretionary accruals; $DACC_{+ve}$ = Absolute value of income increasing discretionary accruals; $DACC_{-ve}$ = Absolute value of income decreasing discretionary accruals; ESO = Percentage of ordinary shares owned by the executive directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of the book value of debt to book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable; ASST = Natural log of the book value of assets. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values

The turning point in the inverse U-shaped relationship between ESO and discretionary accruals reported in Table 4.5 is also estimated. Figure 4.2 presents the graph of the estimated relationship between ESO and discretionary accruals. The estimated turning point is 27.7%. It suggests that in Australia, a positive ESO-discretionary accruals relationship dominates at lower levels of ownership. After the level of ESO reaches 27.7%, a negative relationship consistent with incentive alignment can be seen.

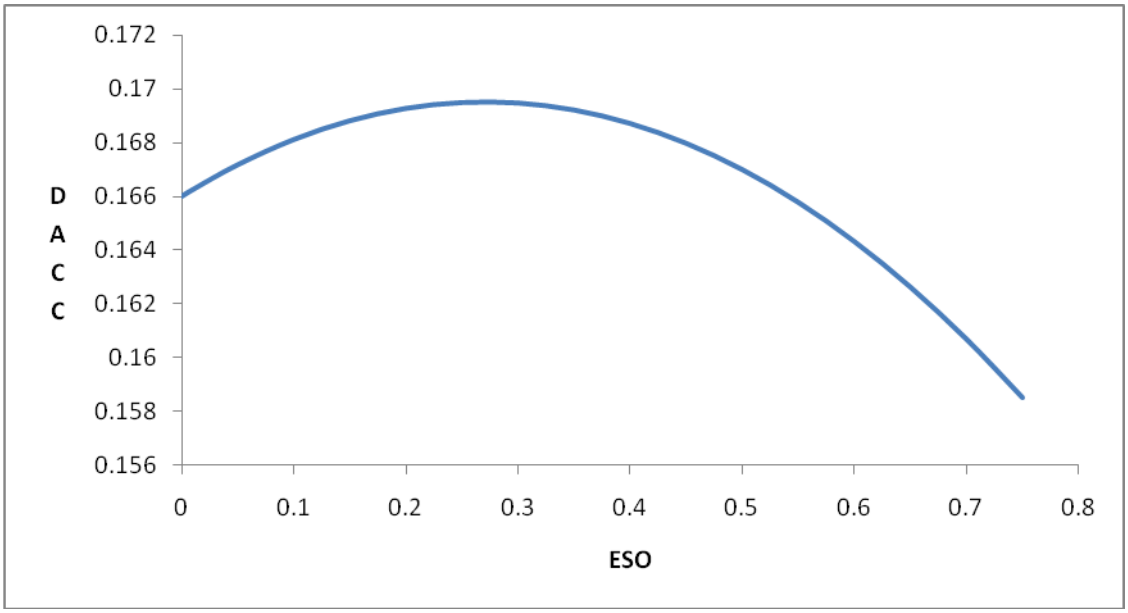

Figure: 4.2: Relationship between ESO and discretionary accruals

4.5.3 ISO and discretionary accruals

It is previously argued that independent directors are less likely to be influenced by the effects of incentive alignment or entrenchment and hence no relationship is expected between ISO and discretionary accruals. This study replicates the analysis conducted for ESO, for ISO, and fails to find any significant

relationship between ISO and discretionary accruals. The results are presented in Table 4.6.[48]

Table 4.6: Relationship between ISO and discretionary accruals

	DACC	$DACC_{+ve}$	$DACC_{-ve}$
ISO	0.026	0.039	0.042
	(0.638)	(0.498)	(0.605)
ISO^2	-0.065	-0.089	-0.117
	(0.574)	(0.504)	(0.426)
USUBSP	0.006	0.002	0.011
	(0.461)	(0.855)	(0.382)
LEV	0.002	0.003	0.006
	(0.680)	(0.639)	(0.716)
BIND	-0.028	-0.031	-0.029
	(0.021)	(0.029)	(0.157)
AUD	-0.001	-0.002	-0.001
	(0.165)	(0.795)	(0.876)
MB	$0.977X10^{-4}$	0.002	-0.002
	(0.811)	(0.063)	(0.015)
LTACC	-0.022	-0.062	0.011
	(0.272)	(0.015)	(0.662)
LOSS	0.013	0.038	-0.018
	(0.128)	(0.000)	(0.148)
ASST	-0.013	-0.012	-0.014
	(0.002)	(0.010)	(0.000)
Intercept	0.181	0.159	0.209
	(0.000)	(0.000)	(0.000)
Adj. R^2	0.057	0.073	0.071

The above table reports the regression results regarding managerial ISO and discretionary accruals. Different notations used in the table are defined as follows: DACC = Absolute value of discretionary accruals; $DACC_{+ve}$ = Absolute value of income increasing discretionary accruals; $DACC_{-ve}$ = Absolute value of income decreasing discretionary accruals; ISO = Percentage of ordinary shares owned by the independent directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of the book value of debt to book value of total assets; BIND = Board independence calculated as the number of independent directors (without any shares) scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable; ASST = Natural log of the book value of assets. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values

[48] This study also uses a linear specification of ISO to examine the same relationship and fails to find any significant result as well. The results are reported in Table B.8 in Appendix B.

4.5.4 MSO and adjusted earnings

In view of the systematic relationship between MSO and discretionary accruals reported above, it is argued that the examination of the relationship between MSO and earnings as a performance measure could be biased. Accordingly, this study replicates the earlier analyses in Chapter 3 using adjusted earnings as a measure of performance. Panels A, B and C of Table 4.7 report the results of an OLS regression, an IV regression and the simultaneous equations system (3 SLS), respectively.

In Panel A the results show significant P values of the coefficients MSO (0.000) and MSO^2 (0.006). The signs of MSO and MSO^2 are negative and positive, respectively. In other words, this study finds a negative relationship between MSO and AROA up to a certain point followed by a positive relationship. The negative relationship between MSO and AROA suggests that in Australia an entrenchment effect sets in at lower levels of ownership. After a certain level of ownership is attained, this study finds a relationship consistent with incentive alignment. This is consistent with the findings in Chapter 3. Once again, however, this is opposite to the findings of the previous studies (see for example, McConnell and Servaes, 1990). It is also found that adjusted earnings measured by AROA are positively related to investment (INV) and negatively related to leverage (LEV).

The results of IV regression in Panel B show significant P values in respect to the coefficients MSO (0.001) and MSO^2 (0.027) when AROA is used to measure adjusted earnings. The signs of MSO and MSO^2 are once again negative and positive respectively, which suggests a nonlinear (U-shaped) relationship between

MSO and adjusted earnings. Once again as posited, this study finds that performance first decreases and then starts to increase when MSO increases beyond a certain point. This is also consistent with the previously documented findings in Chapter 3. It is also found that AROA is positively related to investment (INV) and size (ASST) and negatively related to leverage (LEV).

This study also uses a simultaneous equations system (3 SLS) and the results are presented in Panel C. Consistent with Section 3.5.1, a system of three equations is used and two additional equations (one for MSO and the other for investment) are introduced in addition to the original performance (AROA) equation. The result of the AROA regression shows significant P values for the coefficients MSO (0.000) and MSO^2 (0.044). Once again it supports a nonlinear U-shaped relationship between MSO and AROA. It implies a negative relationship between MSO and performance consistent with an entrenchment effect, followed by a positive relationship after a particular point consistent with an alignment effect. The coefficients of other variables do not show any substantive differences to those reported in the previous two panels. In the MSO regression, the coefficient of AROA shows a positive significant (0.000) P value. Interestingly, this implies that AROA also affects MSO. In other words it refers to a bidirectional relationship between MSO and AROA, which is consistent with Davies et al. (2005). A bidirectional relationship between MSO and AROA also supports the argument to adjust the issue of accruals management using adjusted earnings. The investment (INV) regression shows that MSO also affects investment which is consistent with Cho (1998).

Table 4.7: Relationship between MSO and adjusted earnings

Panel A: OLS regression	
	AROA
MSO	-0.285
	(0.000)
MSO^2	0.269
	(0.006)
LEV	-0.063
	(0.000)
INV	0.002
	(0.092)
USUBSP	0.001
	(0.350)
BIND	0.026
	(0.187)
AGE	-0.003
	(0.384)
ASST	0.004
	(0.584)
Intercept	0.062
	(0.293)
Adj. R^2	0.062
Panel B: IV regression	
MSO	-0.272
	(0.001)
MSO^2	0.289
	(0.027)
LEV	-0.059
	(0.004)
INV	0.047
	(0.072)
USUBSP	0.002
	(0.361)
BIND	0.039
	(0.349)
AGE	-0.003
	(0.183)
ASST	0.001
	(0.077)
Intercept	0.101
	(0.091)
Adj. R^2	0.052

(cont)

Table 4.7 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	MSO	INV
AROA		1.139	-0.004
		(0.000)	(0.912)
MSO	-0.263		0.107
	(0.000)		(0.019)
MSO^2	0.277		-0.212
	(0.044)		(0.021)
LEV	-0.059	-0.079	
	(0.001)	(0.003)	
INV	0.084	-0.343	
	(0.082)	(0.133)	
USUBSP	0.002		
	(0.242)		
BIND	0.020		
	(0.494)		
AGE	-0.003		
	(0.293)		
ASST	0.001		
	(0.064)		
VOL		0.401	0.143
		(0.003)	(0.011)
LIQ		0.472	0.149
		(0.007)	(0.033)
MVEQ		$-0.153X10^{-5}$	
		(0.024)	
Intercept	0.121	0.162	0.101
	(0.090)	(0.009)	(0.000)
Adj. R^2	0.051	0.043	0.132

The above table reports the regression results regarding MSO and adjusted earnings. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; LEV = Leverage, calculated as the ratio of book value of debt to book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of the number of years since the firm was listed on the ASX; ASST = Natural log of the book value of assets; MVEQ = Natural log of the market value of common equity; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; AROA = ROA – DACC; DACC = Discretionary accruals, calculated as the discretionary accruals as per the Chan et al. model scaled by the book value of assets; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

The turning point in the inverse U-shaped relationship between MSO and adjusted earnings reported in Table 4.7 is also estimated. Figure 4.3 presents the graph of the estimated relationship between MSO and adjusted earnings measured by AROA. The estimated turning point is 47.1%.[49] This turning point suggests that a negative MSO-adjusted earnings relationship consistent with an entrenchment effect is documented at lower levels of MSO. After the level of MSO reaches 47.1% a positive relationship consistent with incentive alignment can be seen.

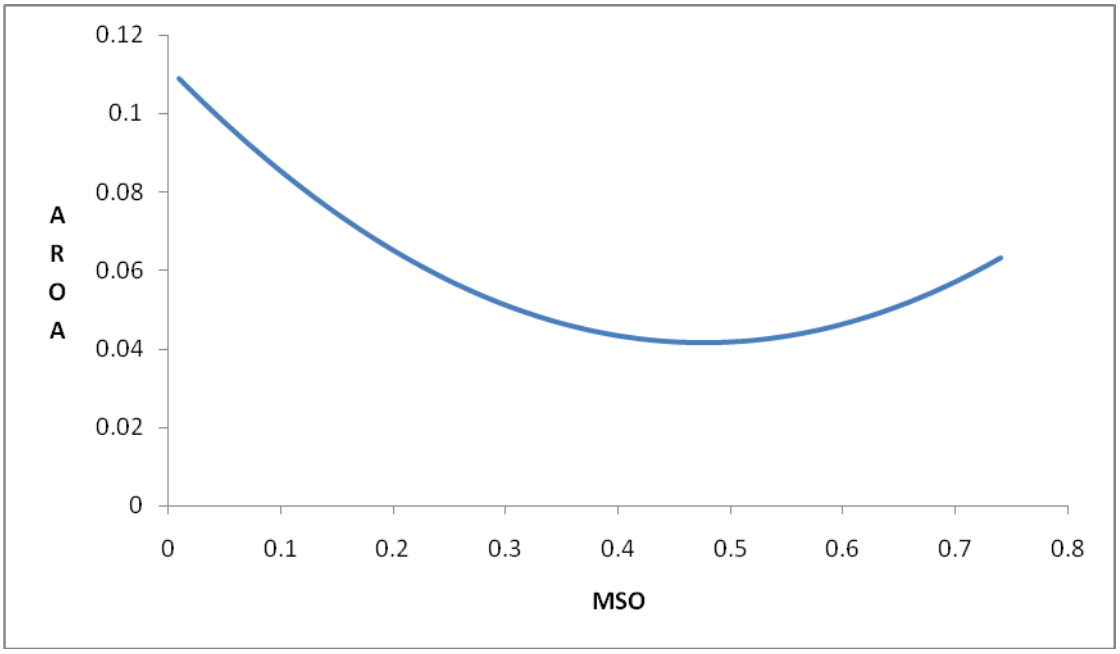

Figure 4.3: Relationship between MSO and adjusted earnings

[49] The turning point is estimated using the IV regression results presented in Panel B of Table 4.6.

4.5.5 ESO and adjusted earnings

This study also examines the relationship between ESO and performance measured by adjusted earnings. The results are presented in Table 4.8. Panels A, B and C provide the results using the OLS regression, the IV regression and the simultaneous equations system (3 SLS), respectively.

In Panel A the regression results show significant P values of ESO (0.019) and ESO^2 (0.031). The signs of ESO and ESO^2 are negative and positive respectively, which imply a nonlinear U-shaped relationship between ESO and performance measured by adjusted earnings. In particular, there is a negative relationship between ESO and AROA up to a certain point followed by a positive relationship. This is consistent with the previously documented relationship between ESO and performance in Chapter 3. It is also found that AROA is positively related to size (ASST) and board independence (BIND), and negatively related to leverage (LEV).

The IV regression results in Panel B of Table 4.8 shows that the P values of ESO (0.023) and ESO^2 (0.021) remain significant. The signs of ESO and ESO^2 are negative and positive respectively, which once again imply a nonlinear U-shaped relationship between ESO and AROA after addressing the issue of endogeneity and reverse-causality. The empirical findings suggest that in Australia a negative ownership-performance relationship, consistent with the entrenchment argument, dominates at lower levels of ownership. After a certain level of ownership, a relationship consistent with incentive alignment is found. The coefficients of control

variables do not show any substantive difference from those presented in the previous panel.

Panel C of Table 4.8 presents the results of the simultaneous equations system (3 SLS). The AROA regression shows significant P values for ESO (0.040) and ESO^2 (0.074). The signs of those two variables are consistent with the previous findings and provide evidence of a U-shaped relationship between ESO and adjusted earnings. The results of the ESO regression show a positive significant P value of AROA (0.007). This implies that AROA also affects ESO; that is, there is a bidirectional relationship between ESO and AROA. This implies that a failure to see a bidirectional relationship between ESO and earnings in Chapter 3 may be due to the distortion caused by discretionary accruals which executive directors are aware of.

Table 4.8: Relationship between ESO and adjusted earnings

Panel A: OLS regression	
	AROA
ESO	-0.250
	(0.019)
ESO^2	0.416
	(0.031)
LEV	-0.067
	(0.001)
INV	0.018
	(0.832)
USUBSP	0.002
	(0.411)
BIND	0.047
	(0.021)
AGE	-0.003
	(0.147)
ASST	0.009
	(0.091)
Intercept	0.006
	(0.916)
Adj. R^2	0.032
Panel B: IV regression	
ESO	-0.214
	(0.023)
ESO^2	0.371
	(0.021)
LEV	-0.059
	(0.004)
INV	0.076
	(0.593)
USUBSP	0.002
	(0.472)
BIND	0.003
	(0.931)
AGE	0.004
	(0.023)
ASST	0.008
	(0.071)
Intercept	0.029
	(0.635)
Adj. R^2	0.023

(cont)

Table 4.8 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	ESO	INV
AROA		0.521	-0.029
		(0.007)	(0.652)
ESO	-0.215		0.073
	(0.040)		(0.173)
ESO^2	0.369		-0.173
	(0.074)		(0.201)
LEV	-0.063	-0.058	
	(0.001)	(0.013)	
INV	0.117	0.024	
	(0.372)	(0.793)	
USUBSP	0.002		
	(0.357		
BIND	0.004		
	(0.318)		
AGE	0.003		
	(0.258)		
ASST	0.007		
	(0.027)		
VOL		-0.141	0.079
		(0.114)	(0.071)
LIQ		0.335	0.157
		(0.027)	(0.014)
MVEQ		$-0.172X10^{-5}$	
		(0.025)	
Intercept	0.041	0.092	0.135
	(0.572)	(0.005)	(0.000)
Adj. R^2	0.025	0.023	0.129

The above table reports the regression results regarding ESO and adjusted earnings. Different notations used in the table are defined as follows: ESO = Percentage of ordinary shares owned by the executive directors of the board; LEV = Leverage, calculated as the ratio of the book value of debt to book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and the book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of the number of years since the firm was listed on the ASX; ASST = Natural log of the book value of assets; MVEQ = Natural log of market value of common equity; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and the book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; AROA = ROA – DACC; DACC = Discretionary accruals, calculated as the discretionary accruals as per the Chan et al. model scaled by the book value of assets; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

The turning point in the inverse U-shaped relationship between ESO and adjusted earnings reported in Table 4.8 is also estimated. Figure 4.4 presents the graph of the estimated relationship between ESO and adjusted earnings measured by AROA. The estimated turning point is 28.8%. This turning point suggests that a negative ESO-adjusted earnings relationship consistent with an entrenchment effect is documented at lower levels of ESO. After the level of MSO reaches 28.8%, a positive relationship consistent with incentive alignment can be seen.

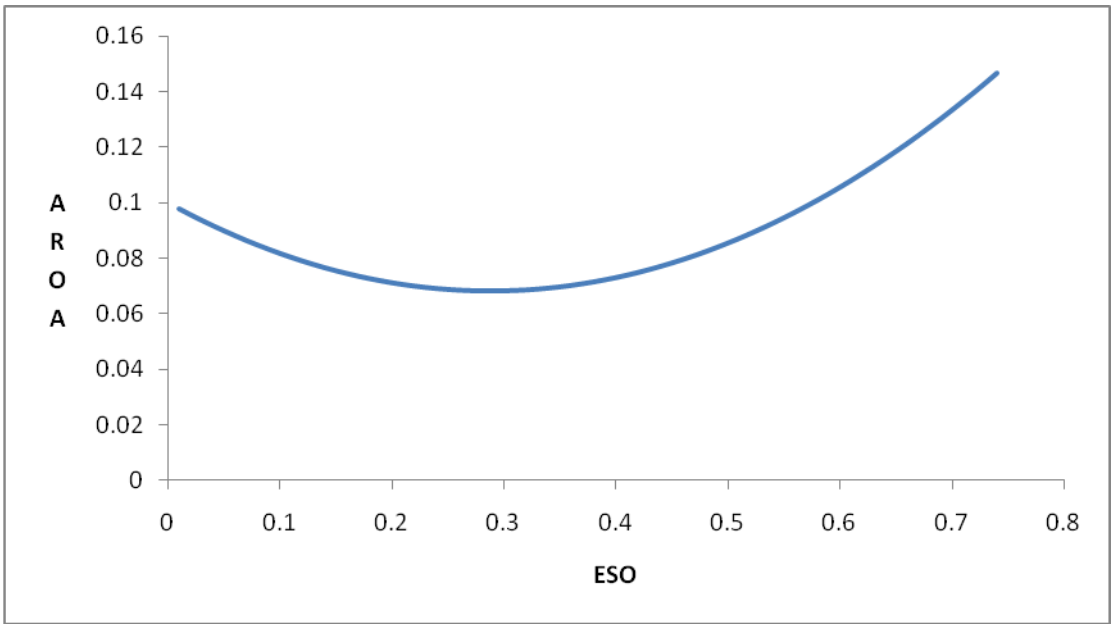

Figure 4.4: Relationship between ESO and adjusted earnings

4.5.6 ISO and adjusted earnings

It is previously argued that independent directors are less likely to be influenced by the effects of incentive alignment or entrenchment. Therefore, the analysis conducted for ESO is replicated for ISO. The results are presented in Table 4.9. It can be seen that there is no relationship between ISO and adjusted earnings.[50]

[50] A linear specification of ISO also shows no relationship with performance. The result is presented in Table B.20 in Appendix B.

Table 4.9: Relationship between ISO and adjusted earnings

Panel A: OLS regression	
	AROA
ISO	-0.324
	(0.131)
ISO^2	0.248
	(0.232)
LEV	-0.059
	(0.002)
INV	0.005
	(0.923)
USUBSP	0.009
	(0.542)
BIND	0.003
	(0.892)
AGE	-0.002
	(0.458)
ASST	0.013
	(0.033)
Intercept	-0.176
	(0.760)
Adj. R^2	0.046
Panel B: IV regression	
ISO	-0.549
	(0.534)
ISO^2	0.724
	(0.149)
LEV	-0.045
	(0.462)
INV	0.109
	(0.685)
USUBSP	-0.048
	(0.903)
BIND	0.035
	(0.861)
AGE	-0.003
	(0.489)
ASST	0.026
	(0.830)
Intercept	0.049
	(0.556)
Adj. R^2	0.034

(cont)

Table 4.9 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	ISO	INV
AROA		1.058	0.131
		(0.105)	(0.838)
ISO	-0.581		-0.376
	(0.158)		(0.406)
ISO^2	0.727		0.642
	(0.331)		(0.522)
LEV	-0.042	-0.027	
	(0.013)	(0.203)	
INV	0.229	-0.267	
	(0.307)	(0.328)	
USUBSP	-0.005		
	(0.913)		
BIND	0.063		
	(0.118)		
AGE	-0.014		
	(0.137)		
ASST	0.029		
	(0.005)		
VOL		-0.429	0.128
		(0.187)	(0.695)
LIQ		0.578	0.158
		(0.145)	(0.659)
MVEQ		$-0.249X10^{-5}$	
		(0.547)	
Intercept	-0.581	-0.441	-0.018
	(0.002)	(0.127)	(0.949)
Adj. R^2	0.040	0.025	0.083

The above table reports the regression results regarding ISO and adjusted earnings. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; LEV = Leverage, calculated as the ratio of the book value of debt to book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and the book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of the number of years since the firm was listed on the ASX; ASST = Natural log of the book value of assets; MVEQ = Natural log of market value of common equity; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and the book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; AROA = ROA – DACC; DACC = Discretionary accruals, calculated as the discretionary accruals as per the Chan et al. model scaled by the book value of assets; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

4.5.7. Further Analysis

This section discusses the additional analyses that have been done to check the robustness of the results outlined in Section 4.5.1 to Section 4.5.6. The relevant results of further analysis are tabulated in Appendix B.

i) MSO and discretionary accruals

This study performs further analysis to check the robustness of the results relating to ownership by different groups of managers and discretionary accruals. First, this study uses the model used by Warfield et al. (1995) as an alternative method to estimate the discretionary accruals. According to this model, discretionary accruals are equal to the difference between the current period accrual and expected normal accrual, and the expected normal accrual is estimated by using a five year firm specific average of prior periods' accounting accruals. It reruns the regressions presented in Tables 4.4 to 4.6 to examine the relationship between the different managerial ownership variables and absolute value of discretionary accruals. The results are presented in Tables B.1 to B.3 in Appendix B. The results presented in Tables B.1 and B.2 suggest an inverse U-shaped relationship for MSO as well as ESO and discretionary accruals. However, the results presented in Table B.3 do not suggest any significant relationship between ISO and discretionary accruals. The overall findings suggest no qualitative differences to the results reported previously.

Second, a random effect model is employed to address the possibility of a spurious relationship between the dependent and independent variables. This may arise due to the exclusion of any unmeasured explanatory variables. Therefore, this study repeats the analyses using a random effect model and fails to find any

qualitative differences to the main findings. In particular, this study documents an inverse U-shaped relationship for MSO and discretionary accruals. A similar relationship is also found between ownership and discretionary accruals for executive directors as for managerial ownership as a whole. Also there is no significant relationship between share ownership by independent directors and discretionary accruals. The results are presented in Table B.4 in Appendix B.

Third, recognising that the levels of independent director ownership may be too low to affect their incentives, this study also examines the impact of ownership by all non-executive directors, that is independent directors and affiliated (grey) directors, on discretionary accruals.[51] It reruns all the regressions presented in Table 4.6 that it uses for ISO. The results presented in Table B.5 in Appendix B suggest that there is no relationship between discretionary accruals and ownership by the non-executive directors.

Fourth, this study uses an alternative approach to control for the industry differences. Consistent with the Australian economy, around 16% of sample companies are resource companies. Accordingly, it also uses a resource dummy in the regressions presented in Tables 4.4 to 4.6 to examine the relationship between ownership by different groups of managers and the absolute value of discretionary accruals. This study documents a significantly positive coefficient for this variable. The results are presented in Table B.6 in Appendix B and suggest that the resource companies are more likely to manage earnings than the non-resource companies, but the results relating to the managerial ownership variables (MSO, ESO and ISO)

[51] The mean level of share ownership by all non-executive directors in the sample is 6.2% in contrast to 6.34% owned by executive directors.

remain unchanged. That is, there is a positive relationship between MSO as well as ESO and discretionary accruals up to a certain level of ownership, followed by a negative relationship (inverse U-shaped). However, there is no relationship between ISO and discretionary accruals.

Finally, the levels of MSO may be endogenously determined as part of the firm's broader operating and financing arrangements (Demsetz, 1983). Firms with larger and/or less reliable accruals and/or greater earnings volatility may choose governance structures, such as higher levels of MSO to reduce agency costs. To address this potential problem, this study uses an IV regression procedure to re-estimate Equation (4.3). Following Hermalin and Weisbach (1991), it creates a lagged ownership variable (lagged by one year) and uses it as an instrument for measuring MSO. The results presented in Table B.7 in Appendix B as per IV regressions are consistent with the analysis using OLS regressions.

ii) MSO and adjusted earnings

This study performs further analysis to check the robustness of the results relating to ownership by different groups of managers and performance measured by adjusted earnings.

First, this study uses the Warfield et al. (1995) model as an alternative method to estimate the discretionary accruals needed to derive AROA. Additionally, it eliminates all accruals by using cash flow from operations as an alternate measure of performance in all the models. This study then reruns all the regressions presented in Tables 4.7 to 4.9 for different managerial ownership

variables. The relationship between MSO as well as ESO and performance measured by AROA and cash flow from operations, is U-shaped. Additionally, there is no relationship between ISO and performance measured by AROA and cash flow from operations. The results are presented in Tables B.9 to B.11 in Appendix B.

Second, this study examines the relationship between ownership by the non-executive directors (independent directors and affiliated (grey directors) and adjusted earnings. It reruns the regressions presented in Table 4.9 after replacing ISO with ownership by the non-executive directors. The results presented in Table B.12 in Appendix B suggest that there is no relationship between ownership by the non-executive directors and performance measured by adjusted earnings.

Third, this study repeats all the analyses using a random effect model to address the issue of a spurious relationship. The coefficients of MSO and ESO variables once again suggest a U-shaped relationship with adjusted earnings. The coefficients of ISO variables, however, remain insignificant. This study does not find any substantive difference to the main findings. The results are presented in Table B.13 in Appendix B.

Fourth, this study reruns all the regressions presented in Tables 4.7 to 4.9 using a resource dummy variable, and documents a significantly negative coefficient for the latter. It suggests that non-resource companies perform better than resource companies. However, the results for the managerial ownership variables (MSO, ESO and ISO) remain unchanged and once again suggest a U-shaped relationship between MSO as well as ESO and adjusted earnings, and no relationship between

ISO and adjusted earnings. The results are presented in Tables B.14 to B.16 in Appendix B.

Finally, as it is argued in Chapter 3 that the contemporaneous relationship between managerial ownership and performance may be inappropriate, this study lags all the managerial ownership variables (MSO, ESO and ISO) by one year to allow for the effect of any change in managerial ownership structure to show up in firm behaviour and performance. The coefficient of MSO is negative and MSO^2 is positive for the MSO-adjusted earnings relationship; it implies a U-shaped relationship. A similar pattern in the relationship has been documented for ESO. However, for ISO the coefficients are insignificant. This is consistent with the main findings of this study. The results are presented in Table B.17 in Appendix B.

4.6 CHAPTER SUMMARY

This chapter presents the study that examines the relationship between MSO and discretionary accruals as well as MSO and performance measured by adjusted earnings. Once again this study is motivated by various Australian institutional characteristics that are clearly different from the US and UK. It also posits that executive directors and independent directors can be different in terms of incentives, and can have an impact on the relationships this study intends to examine. Therefore, this study also examines the MSO-discretionary accruals relationship and MSO-adjusted earnings relationship for ESO and ISO separately.

The first part of this study finds a nonlinear relationship between MSO and the absolute value of discretionary accruals. Specifically, it finds a positive

relationship between MSO and discretionary accruals up to a certain point followed by a negative relationship (inverse U-shaped). It also reveals a similar relationship between ownership and the absolute value of discretionary accruals for executive directors as for MSO as a whole. However, it fails to find any significant relationship between ISO and discretionary accruals. For the MSO-performance relationship this study once again finds a nonlinear U-shaped relationship between MSO and adjusted earnings, both before and after addressing the issue of endogeneity and reverse-causality. The results for ESO also show a similar pattern. More specifically, it once again documents a U-shaped relationship between ESO and adjusted earnings. It also documents a bidirectional relationship between MSO as well as ESO and performance measured by adjusted earnings. However, it does not find any evidence that ISO affects performance.

The next chapter presents the final empirical study in this thesis. An agency framework as well as features of the Australian institutional setting, are used to develop the posited theoretical relationship between MSO and dividend payouts which is then empirically examined.

CHAPTER 5

MANAGERIAL SHARE OWNERSHIP AND DIVIDENDS

5.1 INTRODUCTION

This chapter presents the empirical study that examines the impact of managerial ownership on dividend payouts of the top 300 Australian companies for the period 2000 to 2006. Brealey et al. (2007) urge researchers to seek a better understanding of how companies determine their dividend policy and how that policy affects firm value. As such, this study examines the factors that determine dividend payouts and particularly the role of MSO on dividend payouts in an imputation environment in Australia.

This study first determines the impact of the MSO on the likelihood that a firm pays dividends. It then investigates the pattern of the relationship between ownership by managers and dividend payouts. This study also partitions MSO into ESO and ISO and examines the impact of ESO and ISO on the likelihood of paying dividends and payouts separately.

Prior studies in the US argue that increases in MSO lead to lower agency costs and therefore, firms with higher MSO will have lower dividend payouts. Accordingly several studies find a negative relationship between MSO and dividend payouts using a linear specification of MSO (see for example Rozeff, 1984 and Moh'd et al., 1995), consistent with incentive alignment. Jensen et al. (1992) argue that prior studies failed to control for the issue of endogeneity of MSO as MSO is determined by many of the same firm specific features that affect dividends and debt policy. Therefore, they examine the determinants of debt, dividends and MSO using a simultaneous equations system to control for the issue of endogeneity of MSO. They find a negative relationship between MSO and dividend payouts. Schooley and Barney (1994) examine the role of CEO ownership on dividend yield in the US and find a U-shaped relationship. They show a negative relationship between CEO ownership and dividend yields up to a point of entrenchment of around 15%. Beyond that point, an increase in CEO ownership tends to create an increase in the dividend yields. They conclude that until a CEO becomes entrenched, increased CEO's share ownership reduces agency costs and decreases dividend yield; once entrenchment is reached, increased share ownership increases dividend yield. Therefore, they suggest that the issue of additional share ownership to reduce agency costs in a firm depends upon the CEO's degree of control. Farinha (2003) finds a U-shaped relationship between dividend payouts and MSO in the UK. He shows that after a critical entrenchment level estimated in the region of 30%, the coefficient of MSO changes from negative to positive. However, this study does not control for endogenity or the partial imputation tax system prevalent at the time of the study in the UK.[52]

[52] The UK had used a partial imputation tax system between 1973 and 1999. The rate of the UK

There has been a decreasing propensity of US firms to pay dividends (Fama and French 2001). In fact only 28% of the firms pay dividends in the US (Skinner, 2008).[53] Pattenden and Twite (2008) find that the dividend payouts in Australia have increased subsequent to the introduction of the dividend imputation system, since most resident shareholders prefer fully franked dividends in order to receive tax credits on dividend income. However, no studies examine the impact of MSO on the dividend payouts in a full imputation tax environment where, *ceteris paribus*, the dividend imputation system may outweigh the issues relating to the agency perspective of dividends. Considering the different relationship between MSO and dividend payouts under the classical tax system and the partial imputation tax system, further research is warranted under the full imputation tax system. Accordingly, this study examines the role of MSO, ESO and ISO on dividends in Australia. To address the issues of endogeneity this study also uses a simultaneous equation system, consistent with Jensen et al. (1992). The remainder of this chapter is structured as follows. Section 5.2 discusses the relevant literature. Section 5.3 explains the theory development and research propositions. This is followed by an outline of the research design in Section 5.4. The results are discussed in Section 5.5 and Section 5.6 presents the chapter summary.

5.2 LITERATURE REVIEW

Several theoretical explanations have been proposed to explain why firms pay dividends. They are: dividend irrelevance, bird-in-the-hand, agency costs, tax effect, signalling, clientele effect, life-cycle and catering. As this study focuses on

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imputation tax credit has declined over time and the refundable dividend tax credit has been discontinued.

[53] Skinner reports that the fraction of dividend payers falls steadily from 42% in 1980–1989 to 28% in 1995–2004.

the role of MSO on dividend payouts, it provides a detailed discussion on the literature related to agency framework of dividends, and a brief review on other major theories developed to explain payment of dividends.

5.2.1 Dividend Irrelevance

In their seminal work, Miller and Modigliani (1961) develop the dividend irrelevance hypothesis and argue that in a perfect capital market populated by rational investors, a firm's value is solely a function of the firm's investment opportunities and is independent of the firm's payout policy. They argue that it is not dividend payment that determines the value of a company but the present and future cash flows from the firm's investments. They also contend that managers usually have better information about the prospect of the company and if this information affects their decision to pay dividends, it will convey information to the market about future cash flows. Thus the announcement of a change in dividends may provide a cause for change in share price, but the change in dividend itself is not the cause of price change. In a real world however, it has been found that dividend policy does seem to matter, and relaxing one or more of their perfect capital market assumptions has often formed the basis for the emergence of rival theories of dividend policy. A large body of theoretical work has tried to evaluate the importance that managers and investors attach to dividend policy, by questioning some of the assumptions that characterise the perfect capital markets hypothesised by Miller and Modigliani (1961).

5.2.2 Bird-in-the-hand

An alternative theoretical explanation for the payment of dividends is given by Gordon (1959), known as the bird-in-the-hand theory. This theory asserts that in a world of uncertainty, current dividends are more certain than future share price appreciation. That is investors will often tend to prefer dividend payouts than capital gains. As a result, higher dividend payouts will reduce the required rate of return and hence increase the value of the firm. This argument, however, has not received strong empirical support.

5.2.3 Signalling

This theory asserts that unexpected changes in dividends signal future prospects. The underlying intuition of this theory is based on the information asymmetry between managers and outside investors. A number of theoretical models are developed to explain changes in dividends as a signalling mechanism (see for example, Bhattacharya, 1979; John and William, 1985; Miller and Rock, 1985; Ambarish et al., 1987). Empirical evidence regarding positive (negative) share price reactions to announcements of unexpected increases (decreases) in dividends, has been interpreted as providing support for the signalling theory (see for example, US evidence: Healy and Palepu, 1988; Michaely et al., 1995; U.K evidence: Balachandran et al., 1996, 1999; and Australian evidence: Easton and Sinclair, 1989; Easton, 1991). More recently, however, researchers have questioned the validity of the signalling hypothesis (see for example, Benartzi, et al., 1997; Grullon et al., 2005).

5.2.4 Tax effect

Brennan (1970) and Litzenberger and Ramaswamy (1979) posit that dividends are less desirable than capital gains because under the classical tax system, dividends are taxed more heavily than capital gains. Low dividend payouts lower the required rate of return and increase the market value of the share prices. Because of the relative tax disadvantage of dividends compared to capital gains, investors tend to prefer companies that retain most of their earnings. Therefore, firms should keep their dividend payouts low if they want to maximise the share prices. Several studies including Poterba and Summers (1984) and Barclay (1987) have presented empirical evidence in support of the tax effect argument. However, other studies including Black and Scholes (1974), Miller and Scholes (1982), and Morgan and Thomas (1998) have failed to find evidence consistent with the tax effect.

5.2.5 Clientele effect

According to this theory, investors may be attracted to the types of shares that match their preferences. That is, if dividend income is taxed at a higher rate than capital gains, investors (or clienteles) in high tax brackets may prefer non-dividend payers or low-dividend paying shares and vice versa. This creates the potential for an optimal match between the dividend payouts of a firm and the dividend preferences of its shareholders. While many papers find empirical support for the clientele effect (see for example, Elton and Gruber, 1970; Lakonishok and Vermaelen, 1986; Michaely and Vila, 1995; Bell and Jenkinson, 2002; Graham et al., 2003), a substantial body of evidence also calls the clientele effect into question (see for example, Kalay, 1982; Frank and Jagannathan, 1998; Jakob and Ma, 2004).

5.2.6 Life-cycle

DeAngelo et al. (2006) argue that optimal retention/payout decisions evolve over the corporate life-cycle with variation in a firm's ability to generate cash internally and in its scale of profitable investment opportunities. In the early life-cycle stages, firms have ample profitable projects and little ability to generate funds internally, and so they should largely avoid payouts and raise the capital required to fund their abundant attractive investment projects from external sources. In mature stages, firms should pay dividends and repurchase shares, since they generate ample cash internally and their investment opportunities are large. Their life-cycle theory provides an explanation for the main stylised facts about dividend policy, including why (i) some firms make very high payouts and their aggregate corporate payouts are very large, (ii) earnings and dividends are highly correlated over time and across firms, (iii) the supply of dividends is highly concentrated among a small number of firms with high earnings, (iv) managers are reluctant to reduce or not pay dividends, (v) firms pay dividends on an ongoing basis and avoid accumulating large cash balances, (vi) young growth firms tend to avoid paying dividends, (vii) mature firms tend to pay dividends, and (viii) firms whose equity comes largely from external sources tend not to pay dividends, while firms whose equity is primarily internally generated tend to pay dividends. Denis and Osobov (2008) and Chay and Suh (2009) find evidence supporting the life-cycle theory of dividends.

5.2.7 Catering

Baker and Wrugler (2004a) argue that the decision to pay dividends is driven by investor demands. The investor demand for dividend paying share is time-varying, thereby causing the relative prices of dividend paying and non-paying

shares to fluctuate. They contend that managers cater to the investors by paying dividends when investors put a share premium on payers and by not paying when investors prefer non-payers. Accordingly, non-payers initiate dividend payments when demand is high and payers omit dividends when the demand is low. Baker and Wrugler (2004b) and Li and Lie (2006) find evidence supporting the catering theory of dividends.

5.2.8 Agency costs

The separation of ownership and control forms the basis of the agency explanation for why firms pay dividends. This argument is based on the assumption that managers may conduct actions in accordance with their self-interests which may not always be beneficial for shareholders. This induces shareholders to incur agency costs to monitor managerial behaviour. Dividends may serve as a mechanism to reduce cash available at the discretion of management and thus help to mitigate the agency problems. Prior studies that concentrate on the agency costs based explanation, argue that dividend payouts to shareholders will help to reduce agency problems either by increasing the frequency of external capital raising and associated monitoring by investment bankers and investors (Easterbrook, 1984), or by eliminating free cash flow (Jensen, 1986). A few other studies focus on legal protection to minority shareholders (see for example, La Porta et al., 1999) and managerial ownership (see for example, Farinha, 2003) to provide agency explanation for the payment of dividends.

i) External monitoring

Rozeff (1982) argues that payment of dividends is a kind of bonding cost to reduce the agency costs of equity. Firms that use higher levels of outside equity experience the demand for higher dividend payouts to reduce agency costs. The payment of cash dividends results in external issues to finance existing and future investments. The new financiers will not provide funds to the firm without new information about its intended uses. This process also gives new information to the shareholders about the managerial intentions and they may consider whether or not to continue their ownership in the firm. The whole process ensures monitoring of managerial activities. Rozeff (1982) also contends that raising funds through external issues increases the transaction costs of equity. Therefore, firms try to choose an optimum dividend payout level.

Easterbrook (1984) posits that dividend payouts will force the managers to approach the capital market for raising funds. In this case investment professionals such as bankers and financial analysts will also be able to monitor managerial behaviour. Therefore, shareholders are able to monitor managers at a lower cost. This suggests that dividend payouts increase management scrutiny by outsiders and reduce the chances for managers to act out of their own interests. However, Easterbrook also suggests that increasing dividend payouts might force the managers to take undesirable actions like increasing firm leverage, which may sometimes increase the risk of the firm.

ii) Free cash flow

Jensen (1986) argues that firms with excess (free) cash flow give the managers more flexibility to use the funds in a way that benefits themselves but not the shareholders. He also argues that managers have incentives to enlarge the size of their firms beyond the optimal size, to amplify the resources under their control and moreover to increase their compensation, which may be related to firm size. Thus, if a firm has a substantial surplus of cash the overinvestment problem will be more pronounced, and managers may undertake negative NPV projects. Extracting the excess funds of free cash flow that management controls, can reduce this overinvestment problem. Increasing dividend payouts may help to mitigate the free cash flow under managerial control, thereby preventing them from investing in negative NPV or poor projects. As a result, paying more dividends will reduce the agency costs between managers and shareholders. Jensen also notes that debt might play a similar role to dividends in reducing the agency costs of free cash flow, by reducing the funds under management control.

iii) Investor protection

La Porta et al. (2000) has provided much broader agency explanations of dividends for a multi-country setting. They argue that dividend payouts differ in countries with different levels of legal protection for minority shareholders. They find that firms operating in civil law countries pay lower dividends than those in common law countries (where legal protection is generally higher), which suggests that agency considerations are indeed relevant in explaining the reasons why firms pay dividends. They also find that firms operating in common law countries and having a rapid growth rate, pay fewer dividends than their counterparts with slow

growth rates. This implies that shareholders use their legal power to force managers to pay back cash when investment opportunities are low.

Farinha and Lopez de Foronda (2005) examine the relationship between MSO and dividends for two sets of firms taken from countries with common law systems (common law firms) and civil law systems (civil law firms). They hypothesise that due to the different characteristics of both the legal system and the nature of agency conflicts between common and civil law systems, the relationship between ownership by insiders and dividends policies will be considerably distinct between the two sets of firms. They contend that agency conflicts exist between managers and shareholders in the common law firms. Accordingly they posit and find a negative-positive-negative relationship between MSO and dividend payouts in these firms. In contrast, in the civil law firms, MSO is mostly associated with large shareholders through corporate networks or family control. There is typically little separation between ownership and control, and conflicts are mainly between large shareholders who control the decisions of firms and minority shareholders. Therefore, they posit and find a positive-negative-positive pattern for the relationship between MSO and dividends for civil law firms.

In an unpublished study, John and Knyazeva (2006) argue that managers will pre-commit to dividend payments to mitigate the agency conflict due to poor governance. Given the generally strong investor level protection in the US, poorly monitored managers are not protected from firing. Therefore, if the agency conflict is severe, they will trade a fraction of their private benefits for greater job security and adopt a costly dividend payout policy. The dividend pre-commitment can

increase the firm value by constraining the managerial actions. Consistent with their argument, John and Knyazeva (2006) document a negative relationship between corporate governance indices (both external and internal) and dividends using US data, which implies that firms with weak corporate governance (both external and internal) are more likely to use dividends. They also document that this relationship is stronger for firms with high free cash flow, which suggests that governance is important in determining the payouts when the free cash flow problem is severe.

iv) Managerial share ownership

Rozeff (1982), Dempsey and Laber (1992) and Moh'd et al. (1995) find a negative relationship between MSO and dividend payouts and a positive relationship between the number of shareholders and dividend payouts in the US. They interpret this finding as shareholders seeking greater dividend payouts as they perceive their level of control diminishing. Schooley and Barney (1994) propose a nonlinear relationship between MSO and dividend payouts. In particular, they examine the relationship between CEO ownership and dividend yields. They find a negative relationship between ownership and dividends up to the point of entrenchment.[54] Beyond that point, an increase in CEO ownership tends to create an increase in dividend yields.

A recent study by Farinha (2003) in the UK argues that the two competing theories, namely incentive alignment and entrenchment, have interesting implications for the relationship between MSO and dividend payouts. He argues that below an entrenchment level, MSO and dividend payouts can be seen as substitute

[54] The entrenchment point is around 15%.

governance devices, which lead to a negative relationship between these two variables; after a certain critical entrenchment level, MSO increases will be associated with potential entrenchment related agency costs and dividend payouts become a compensating monitoring force. Accordingly, he finds that, after a critical entrenchment level of MSO estimated in the region of 30%, the coefficient of MSO changes from negative to positive.

Jensen et al. (1992) argue that MSO itself may be determined by many of the same firm specific features that affect dividends and debt policy. They also argue that firms differ from each other with respect to factors such as size, growth and profitability, and these factors are empirically related to debt, dividends and MSO. Additionally, the signalling and the agency theories suggest that a firm's MSO, dividend payouts and debt are directly related to each other in terms of the direction of causality, and hence their effects have to be determined simultaneously. They argue that improper estimation may result in incorrect inferences of causality, and empirical work should be structured to avoid any false attribution of causality among them that actually stems from spurious correlation. Therefore they examine the three managerial decisions of debt, dividends, and MSO in a simultaneous equations system. They find that high MSO firms choose lower levels of both debt and dividends. But they do not find that MSO influences the level of dividend payouts.

5.2.9 Institutional background and dividend payouts in Australia

As mentioned earlier in Section 1.3.2, the distribution of dividends to shareholders in Australia gets more prominence due to the full imputation system of

taxation. In a traditional taxation system (known as the classical tax system), firms and shareholders are treated as distinct taxpayers, hence are taxed separately – once in the hands of the firm itself and again in the hands of the shareholders. This 'double taxation' of dividends was addressed on 1 July 1987 when an imputation system was introduced in Australia. Under the Australian system, companies provide resident shareholders with a credit for corporate tax paid, which can be used to offset personal tax on dividend income.[55] The dividends paid out of companies' after tax profits (when tax is paid in Australia) carry imputation credits, and are referred to as franked dividends. Profits that are earned and taxed outside Australia cannot be paid out to investors as franked dividends. Any dividends arising from the profits earned outside Australia will be unfranked and therefore subject to tax at the shareholders' marginal income tax rate. Thus an additional difference between the US and Australian system is that in Australia, franked dividends do not suffer from a tax disadvantage as compared to other forms of distribution such as share repurchases.

Officer (1990) argues that the introduction of a full imputation tax system will encourage companies with resident shareholders to increase their dividend payouts. Most resident shareholders would prefer to receive returns in the form of fully franked dividends, as the tax rate on this form of distribution is lower than that on capital gains. Pattenden and Twite (2008) argue that, with the introduction of dividend imputation, firms have incentives to increase dividend payouts with franking credits, to enable their shareholders to reduce their tax burden. Consistent with their argument they find that dividend initiations as well as dividend payouts,

[55] A description of the Australian dividend imputation tax system can be found in, for example, Cannavan et al. (2004).

and the use of dividend reinvestment plans, have increased subsequent to the introduction of dividend imputation in Australia.

Table 5.1: Tax effects of dividend on resident shareholders

Share holders	Superannuation fund	Medium income individual	High income individual
Panel A: Franked dividend			
Marginal tax rate (%)	15	30	45
Company profit ($)	100	100	100
Less: company tax ($)	30	30	30
Franked dividend ($)	70	70	70
Net shareholder tax ($)	-15	0	15
After tax return ($)	85	70	55
Panel B: Unfranked dividend			
Marginal tax rate (%)	15	30	45
Company profit ($)	100	100	100
Less: company tax ($)	30	30	30
Unfranked dividend($)	70	70	70
Shareholder tax ($)	10.50	21	31.50
After tax return ($)	55	49	38.50

The above table presents the effect of the imputation system on different types of resident shareholders who receive a franked dividend paid from the company's profit of $100. The investor groups identified are superannuation funds, medium income individuals and high income individuals. Franked dividends are paid from income that has been taxed at the full Australian corporate tax and includes an imputation tax credit. The imputation tax credit is dividend × corporate tax rate / (1−corporate tax rate). It is assumed that all taxes are paid at the statutory rates.

(Source: Adapted from Pierson et al., 2009)

Table 5.1 shows the tax effects of dividends on three different groups of resident shareholders. Panel A (B) shows the impact of tax on franked (unfranked) dividends. Under the imputation system, company income tax is assessed at the company tax rate (for example, 30% in the above table). Therefore, the amount of company tax is $30 on taxable profits. The imputation system recognises the tax paid ($30) by the company in assessing the tax liability of the shareholder's dividend income, after giving credits for this amount of tax paid. In the above example, the maximum franked dividend the company can pay is $70. If the company pays $70 franked dividend, tax paid by the company ($30) is added to the

shareholder's income as an imputation credit to determine the shareholder's taxable income ($100). Hence a high income individual's gross tax liability will be $45. However, shareholder's net tax liability will be the difference between the gross tax liability and imputation credit/the amount of tax already paid by the company ($30). That is, the net tax liability will be $15.

If the company earns profit outside of Australia then it cannot pay franked dividend. That is, the company has to pay unfranked dividend, which does not include an imputation tax credit. Therefore, the amount of tax paid by the company ($30) is not included in the shareholder's income. A shareholder's tax liability is assessed on after tax company profit declared as unfranked dividend at the applicable tax rate of shareholders. In the above example, a high income individual's income is $70. When the company pays unfranked dividend, shareholder's taxable income will be $70 as s/he is not entitled for the imputation credit. Her/his gross tax liability will be $31.50. Therefore, it is notable that if the company pays unfranked dividends, shareholder's after tax return would be lower as they are under double taxation similar to the US classical tax system.

The capital gains tax in Australia applies only to gains of assets acquired on or after 20 September, 1985. It is payable only when gains are realised. The calculation of capital gains tax can differ depending on whether the asset was purchased before or after 21 September 1999. Provided that the asset has been held for at least 12 months, the maximum rate of capital gains tax for an individual will be half of their marginal tax rate on their ordinary income. Given that the effective rate of capital gains tax is less than investor's marginal income tax rate, most

investors are likely to prefer capital gains rather than unfranked dividends. Shareholders who are taxed at the same rate on both ordinary income and capital gains will be indifferent between payment of unfranked dividends and retention of profits. On the other hand, shareholders who are taxed at a lower rate on capital gains than on ordinary income, will prefer retention of profits rather than payment of unfranked dividends. Overall, the combination of the imputation system and capital gains tax means that investors differ in their preferences for dividend income versus capital gains.

5.3 THEORY DEVELOPMENT AND RESEARCH PROPOSITIONS

As discussed in Sections 2.4.1 and 2.4.2 that agency problems and managerial equity ownership may affect incentive alignment and entrenchment. The agency perspective of dividends suggests that the payment of dividends forces firms to raise additional funds from the external capital market, thereby resulting in an external monitoring by the market participants (Easterbrook, 1984). It is also recognised that dividend payouts may reduce agency costs by limiting the amount of free cash available at managerial discretion (Jensen, 1986). Agency costs may also be reduced by an increase in MSO since it introduces self monitoring by the managers because of an incentive alignment effect. Therefore, MSO and dividends may be substitute monitoring devices that suggest a negative relationship.

Managerial entrenchment has an interesting implication for the pattern of dividend payouts which is unique and distinctive from the other competing theories of dividend behaviour (Farinha, 2003). Farinha argues that up to a certain level of MSO, dividends and MSO are substitute monitoring devices. At that time

stakeholders, including market participants, perceive lower agency costs because of the incentive alignment. Therefore, the relationship between MSO and dividends should be negative. On the other hand, when MSO increases beyond a certain critical level associated with managerial entrenchment, higher agency costs will be incurred as a result of the other stakeholders, such as capital market participants and lenders, anticipating non-value maximising behaviour. The agency and free cash flow framework suggests that when this situation occurs, managers will compensate by increasing dividend payouts in order to reduce agency costs. In other words, higher dividends could be a compensating mechanism to reduce agency costs by taking away excess cash available to managers, thus reducing the potential for non-value maximising activities. Accordingly, beyond the level of entrenchment there should be a positive relationship between MSO and dividends. Farinha's results are consistent with the pattern posited above.

In the light of Farinha's (2003) findings, it may be possible to posit the same kind of relationship in Australia. However, the environment in Australia, given its full imputation system, is different from the environment in the US and UK. Under the imputation system, resident shareholders may claim imputation tax credits and reduce their tax liabilities if the dividends are declared from franked dividends.[56] It allows the resident shareholders credit for tax paid by firms, so that the after-tax profits distributed as dividends are typically not taxed again. Related to this, Officer (1990) argues that the introduction of a full imputation system will encourage companies with resident shareholders to increase their dividend payments. Australian managers with resident shareholders are therefore likely to be motivated

[56] Dividends paid from earnings that have been taxed at the Australian corporate tax rate are termed franked dividends.

to increase the dividend payouts, since resident shareholders, including share-owning managers, should prefer dividends.[57] Given the tax preference of shareholders as well as managers, the potential imputation benefits may outweigh any issue related to the agency perspective of dividends. The more shares managers own, the more tax credits they may obtain by paying franked dividends. Notwithstanding the tax preference of shareholders, this may also motivate them to increase the dividend payouts. This study therefore, posits a positive relationship between managerial share ownership and the likelihood of paying dividends as well as dividend payouts.

With the exception of Schooley and Barney (1994), previous studies that examine the relationship between MSO and dividends do not differentiate between the types of insiders owning the shares.[58] As outlined in Section 2.5, executive and non-executive directors (particularly the independent directors) are likely to have different incentives as will the effect of their share ownership. At any given level of share ownership executive directors, including chief executive officers, are likely to be more sensitive to the effects of incentive alignment and entrenchment than independent directors. Accordingly, as with MSO, ESO and dividends may be substitute monitoring mechanisms. On the other hand, independent directors are likely to be more concerned about their reputation.[59] Their reputation effects are likely to outweigh any issues relating to incentive alignment or entrenchment that may otherwise arise as a result of owning shares in the firm. Therefore, it is argued

[57] The directors of the top 300 ASX listed companies are likely to be a high taxpayer group and should be motivated to reduce their tax liabilities.
[58] They focus on CEO ownership only and find a nonlinear relationship between ownership by the chief executive officers and dividends.
[59] See Section 2.5 for details.

that ISO and dividends should not be substitute monitoring mechanisms.[60] Once again, their reputation effects should outweigh any issue related to franked dividends as well as the tax credits. It is also not likely that they may change their stakes based on the amount of franked dividends paid by the firm. Accordingly this study expects the relationship between executive directors' share ownership and the likelihood of paying dividends as well as dividend payouts, to be as posited in the case of managerial share ownership as a whole, but it expects no relationship between independent directors' share ownership and the likelihood of paying dividends as well as dividend payouts.

5.4 RESEARCH DESIGN

5.4.1 Data

As outlined in Section 3.4.1, this study initially identifies the top 300 Australian companies by market capitalisation at two dates, 30 June 1999 and 30 June 2006. The final sample is comprised of 179 firms that satisfy the following criteria: (a) excludes 49 banks, financial institutions, trusts and utility firms, as their dividend policies are influenced by government regulations; (b) excludes 55 firms due to missing information; (c) excludes 17 firms who are ineligible to pay dividends.[61] This study examines annual panel data over a seven-year period from 2000 to 2006. The final sample is comprised of a total of 1089 firm-year observations over the seven year period.[62] As evident in Table 5.2, the sample firms

[60] It is also possible that the independent directors may own insignificant amounts of shares in the firm. Hence as a part of further analysis, this study also examines the impact of ownership on dividends by all non-executive directors that is independent directors and affiliated (grey) directors.
[61] These were eliminated because when a firm makes losses and has negative retained profits in a given year, they are legally unable to pay dividends (Section 254T of the Australian Corporations Act 2001).
[62] Once again the final sample is slightly different to that used in the first and second studies, due to the different filters.

belong to 21 Global Industrial Classification Standard Sectors (GICS) and 8 broad industrial sectors.

The accounting information was collected from Aspect Fin Analysis and Connect 4 databases. The ownership and other corporate governance data was hand collected from the corporate governance disclosures, shareholding information and directors' reports contained in annual reports.

Table 5.2: Sample Description

Panel A: Sample selection		
Number of firms		300
Less:		
Financial and utility companies		49
Companies without necessary information for corporate governance and control variable data		55
Companies ineligible to pay dividends		17
Total		179
Panel B : Analysis of sample by GICS sectors and industries		
GICS sector	**GICS industry**	
Material	Metal and mining	25
	Construction material	5
	Paper and forest products	6
	Chemicals	3
Industrials	Capital goods	15
	Transportation	4
	Commercial services and supplies	9
Health care	Health care equipment and supplies	6
	Health care provider and services	7
	Pharmaceutical, biotechnology and life science	6
Consumer staples	Food and staples retailing	5
	Food, beverage and tobacco	14
Consumer Discretionary	Consumer services	9
	Retailing	13
	Media	14
	Consumer durables and apparels	6
	Automobile and components	6
Telecommunication	Diversified telecommunication	3
Energy	Oil, gas and consumable fuels	12
Information technology	Technology, hardware and equipment	4
	Software and services	7
Total		179

Table 5.3 reports the descriptive statistics. The descriptive statistics of the key variables are very similar to those presented in Tables 3.2 and 4.2. The slight variation results from a slightly different sample used in this study. It also presents some new variables. For example, it shows that the average percentage of franking on dividend payouts (DIVTA) is 0.04, the average franked dividend (PFD) is 74.60% and the average effective tax (ETR) rate is 0.27.

Table 5.3: Descriptive statistics

	Mean	Median	Stdev	Q1	Q3
DIVTA	0.041	0.032	0.042	0.016	0.051
MSO (%)	12.1	2	17.8	0.20	19.2
ESO (%)	6.4	0.20	13.4	0.000	2.7
ISO (%)	1.5	0.10	4.7	0.000	0.70
USUBSP (%)	37	34	22.7	19.1	55
BIND	0.572	0.60	0.206	0.40	0.75
PFD	0.746	1.000	0.413	0.50	1
ETR	0.265	0.262	0.277	0.201	0.304
LEV	0.251	0.243	0.246	0.136	0.338
ROA	0.061	0.062	0.071	0.038	0.098
CASH	0.183	0.148	0.106	0.017	0.10
GRW	0.440	0.157	1.491	0.059	0.325
DISP	4.005	3.943	0.660	3.540	4.409
ANST	1.754	2.079	0.806	1.386	2.398
VOL	0.025	0.015	0.039	0.009	0.027
INV	0.073	0.050	0.071	0.028	0.098
MVEQ	8.699	8.67	0.709	8.239	9.152
RETA	0.104	0.113	0.286	0.039	0.029
PPE	0.583	0.46	0.976	0.248	0.747

The above table reports descriptive statistics. Different notations used in the table are defined as follows: DIVTA = Dividends to total assets calculated as ordinary dividends scaled by the book value of total assets; MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; PFD = Percentage of franking on dividends declared by a company; ETR = Effective tax rate calculated as the ratio of annual tax expenses and net earnings before interest and taxes; LEV = Debt, calculated as the ratio of book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation, and the book value of total assets; GRW = Growth rate calculated as the average of annual growth rate of a firm's total sales of the preceding five years; DISP = Dispersion, calculated by taking the natural log of the total number of shareholders of a firm; ANST = Analysts calculated as the natural log maximum number of analysts following in a particular year; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; INV = Investment, calculated as the ratio of capital expenditure to book value of assets; MVEQ = Natural log of the market value of common equity; RETA = Retained equity calculated as the ratio of retained earnings and the book value of assets; PPE = Tangible assets calculated as the ratio of the book value of property, plant and equity and book value of assets.

Table 5.4 presents the correlation matrix using Pearson correlation. The correlation matrices of the key variables are also very similar to those presented in Tables 3.2 and 4.2. Both MSO and ESO are positive and significantly correlated with dividend payouts (DIVTA). ESO is negative and significantly correlated with BIND. It suggests that high ESO firms are less likely to have an independent board, perhaps to get themselves insulated from board monitoring. The percentage of franking on dividend (PFD) is positively correlated with both MSO and ESO. It implies that managers as well as executive directors prefer franked dividends. The negative correlation between the market value of equity (MVEQ) and MSO suggests that managers do not have high stakes in large firms. A negative correlation between DIVTA and VOL indicates that risky firms pay lesser dividends.

Table 5.4: Correlation matrix

	ANST	ROA	DIVTA	ESO	ETR	CASH	PFD	ISO	LEV	RETA	PPE	BIND	GRW	USUBSP	VOL	MSO	MVEQ	DISP
ANST	1.000																	
ROA	**0.136**	1.000																
DIVTA	-0.004	**0.503**	1.000															
ESO	**-0.253**	**0.075**	**0.091**	1.000														
ETR	-0.046	**0.011**	0.014	0.009	1.000													
CASH	**-0.053**	**0.644**	**0.578**	0.035	-0.018	1.000												
PFD	**0.069**	**0.098**	**0.364**	**0.082**	0.010	-0.009	1.000											
ISO	**-0.151**	**-0.063**	-0.050	-0.008	-0.019	-0.077	0.030	1.000										
LEV	**0.134**	**-0.198**	**-0.137**	**-0.085**	**-0.072**	**-0.165**	-0.036	-0.004	1.000									
RETA	0.001	**0.227**	**0.259**	**0.078**	0.050	**0.122**	**0.212**	-0.014	**-0.221**	1.000								
PPE	**0.451**	**-0.223**	**-0.205**	**-0.300**	-0.026	**-0.135**	**-0.056**	**-0.111**	**0.235**	-0.003	1.000							
BIND	**0.199**	**-0.119**	-0.031	**-0.192**	-0.010	**-0.104**	-0.022	0.028	**0.094**	-0.032	**0.181**	1.000						
GRW	-0.014	0.008	**-0.066**	-0.008	0.021	-0.005	-0.042	**0.067**	-0.034	-0.035	-0.027	0.000	1.000					
USUBSP	**-0.148**	**0.088**	-0.026	**0.169**	**0.053**	**0.062**	**-0.116**	0.042	**-0.097**	**0.058**	-0.021	**-0.313**	0.009	1.000				
VOL	**-0.163**	**0.317**	**-0.145**	0.011	-0.022	**0.393**	**-0.181**	0.001	-0.040	**-0.455**	**-0.231**	**-0.085**	0.020	**0.069**	1.000			
MSO	**-0.280**	0.036	**0.052**	**0.720**	-0.001	-0.041	**0.134**	**0.287**	**-0.063**	**0.085**	**-0.297**	**-0.269**	0.000	**0.259**	-0.031	1.000		
MVEQ	**0.180**	**0.079**	0.001	**-0.084**	0.000	**0.092**	0.012	**-0.053**	0.026	**0.092**	**0.353**	**0.078**	-0.029	-0.002	-0.018	**-0.114**	1.000	
DISP	**0.278**	-0.003	0.038	**-0.147**	-0.011	0.017	**0.076**	**-0.078**	**0.071**	0.041	**0.438**	**0.222**	**-0.063**	**-0.208**	**-0.069**	**-0.193**	**0.489**	1.000

The above table reports correlation matrices. Different notations used in the table are defined as follows: ANST = Analysts calculated as the natural log maximum number of analysts following in a particular year; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; DIVTA = Dividends to total assets calculated as ordinary dividends scaled by the book value of total assets; ESO = Percentage of ordinary shares owned by the executive directors of the board; ETR = Effective tax rate calculated as the ratio of annual tax expenses and net earnings before interest and taxes; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation, and the book value of total assets; PFD = Percentage of franking on dividends declared by a company; ISO = Percentage of ordinary shares owned by the independent directors of the board; LEV = Debt, calculated as the ratio of the book value of debt to book value of total assets; RETA = Retained equity calculated as the ratio of retained earnings and the book value of assets; PPE = Tangible assets calculated as the ratio of the book value of property, plant and equity and the book value of assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; GRW = Growth rate calculated as the average annual growth rate of a firm's total sales in the preceding five years; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; MSO = Percentage of ordinary shares owned by the directors of the board; MVEQ = Natural log of market value of common equity; DISP = Dispersion, calculated by taking the natural log of the total number of shareholders of a firm. Bold text indicates significant coefficient.

5.4.2 Model specification

This study first examines the relationship between MSO and the likelihood of paying dividends using a logit regression (see for example, Barclay et al., 2009).

i) Logit model

The following regression equation is used:

$$\text{DDP} = \alpha_0 + \alpha_1(\text{MSO}) + \alpha_2(\text{Board independence}) + \alpha_3(\text{Dispersion}) + \alpha_4(\text{Effective tax rate}) + \alpha_5(\text{DFD}) + \alpha_6(\text{Leverage}) + \alpha_6(\text{Profitability}) + \alpha_7(\text{Cash}) + \alpha_8(\text{Growth}) + \alpha_9(\text{Volatility}) + \alpha_{10}(\text{Block holdings}) + \alpha_{11}(\text{Analyst}) + \alpha_{12}(\text{Dividend reinvestment}) + \alpha_{13}(\text{Retained equity}) + \alpha_{14to20}(\text{GICS Sectoral dummies}) + \alpha_{21to26}(\text{Year dummies}) + \varepsilon \quad \textbf{(5.1)}$$

DDP is a dummy variable and takes a value of 1 if the firm pays dividend in a particular year and 0 otherwise. MSO, ESO, and ISO are calculated by taking the percentage of ordinary shares owned by the directors, executive directors and independent directors, respectively. Consistent with the posited MSO-dividends relationship outlined in Section 5.3, this study uses a linear specification in regards to the MSO variables (see for example, Rozeff, 1982).

The control variables introduced in the above equations include board independence, dispersion of the shareholders, effective tax rate, franked dividend dummy, leverage (debt), profitability, cash position, growth, volatility, unaffiliated substantial shareholdings, analysts, dividend reinvestment plan and retained equity. Board independence is calculated as the number of independent directors scaled by the size of the board (Farinha, 2003). Dispersion is calculated by taking the natural log of the total number of shareholders in a firm (Rozeff, 1982; Dempsey and Laber, 1992). Effective tax rate is calculated by taking the ratio of annual tax expenses and

net earnings before interest and taxes (Gupta and Newberry, 1997). DFD is a dummy variable 1 if the firm declares franked dividends. Leverage is calculated as the ratio of the book value of debt and book value of assets. Profitability is calculated as net profit after tax scaled by the book value of total assets (Jensen et al., 1992; Farinha, 2003). Cash position is calculated as earnings before interest, tax, depreciation and amortisation scaled by the book value of total assets (John and Knyazeva, 2008). Growth is calculated as the average of the annual growth rate of a firm's total sales of the preceding five years. Volatility is calculated as the standard deviation of earnings of the preceding five years scaled by the book value of assets (Cho, 1998). Block holdings are estimated by taking the percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders. Analyst is the natural log of the maximum number of analysts following in a particular year (Farinha, 2003). Dividend reinvestment is a dummy variable 1 if the firm has a dividend reinvestment plan. Retained equity is calculated by taking the ratio of retained earnings and the book value of assets (DeAngelo et al., 2006).

ii) OLS model

This study uses an OLS regression to examine the relationship between MSO and dividend payouts (see for example, Rozeff, 1982; Barclay et al., 2009).

$$\text{Dividend payouts} = \alpha_0 + \alpha_1(\text{MSO}) + \alpha_2(\text{Board independence}) + \alpha_3(\text{Dispersion}) + \alpha_4(\text{Effective tax rate}) + \alpha_5(\text{DFD}) + \alpha_6(\text{Leverage}) + \alpha_6(\text{Profitability}) + \alpha_7(\text{Cash}) + \alpha_8(\text{Growth}) + \alpha_9(\text{Volatility}) + \alpha_{10}(\text{Block holdings}) + \alpha_{11}(\text{Analyst}) + \alpha_{12}(\text{Dividend reinvestment}) + \alpha_{13}(\text{Retained equity}) \; \alpha_{14to20}(\text{GICS Sectoral dummies}) + \alpha_{21to26}(\text{Year dummies}) + \varepsilon \quad \textbf{(5.2)}$$

Dividend payouts are calculated by taking the ratio of dividends and total assets (Barclay et al., 2009). The definitions of managerial share ownership and control variables are identical to those used in Equation (5.1).

iii) Simultaneous equations system

Jensen et al. (1992) argue that MSO itself is influenced by the same firm specific features that could affect firm financial policies including debt and dividend policy. They also contend that the signalling and the agency theories suggest that a firm's MSO, dividend payouts and debt are directly related to each other in terms of the direction of causality, and hence their effects have to be determined simultaneously. Therefore, to address the issue of simultaneous determination of ownership by the different groups of managers, dividend payouts and debt, this study follows Jensen et al. (1992) and uses a simultaneous equations system (3 SLS). Two additional equations have been used along with Equation (5.2): one for MSO and the other one for debt. The MSO regression equation is:

$$\text{MSO} = \beta_0 + \beta_1(\text{Dividend payouts}) + \beta_2(\text{Leverage}) + \beta_3(\text{Profitability}) + \beta_4(\text{Volatility}) + \beta_5(\text{Liquidity}) + \beta_6(\text{Investment}) + \beta_7(\text{Market value of equity}) + \beta_{8to14}(\text{GICS Sectoral dummies}) + \beta_{15to20}(\text{Year dummies}) + \varepsilon \quad \textbf{(5.3)}$$

The control variables used in this equation are leverage (debt), profitability, volatility, liquidity, investment and market value of equity. The definitions of leverage, profitability and volatility are identical to those used in Equations (5.1) and (5.2). Liquidity is calculated as the ratio of net operating cash flows and the book value of assets (Cho, 1998). Investment is calculated as the ratio of capital expenditure to the book value of assets (Cho, 1998). Market value of equity is the natural log of the market value of equity (Cho, 1998).

The following regression equation has been used for leverage (debt):

$$\text{Leverage} = \delta_0 + \delta_1(\text{Dividend payouts}) + \delta_2(\text{MSO}) + \delta_3(\text{Profitability}) + \delta_4(\text{Volatility}) + \delta_5(\text{Liquidity}) + \delta_6(\text{Tangible asset}) + \delta_{7to13}(\text{GICS Sectoral dummies}) + \delta_{14to19}(\text{Year dummies}) + \varepsilon \quad \textbf{(5.4)}$$

The control variables used in this equation are profitability, volatility, liquidity and tangible assets. The definitions of profitability, volatility and liquidity are identical to those used in Equation (5.3). Tangible asset is defined as the ratio of property plant and equipment and the book value of assets (Jensen et al., 1992).

5.5 RESULTS

5.5.1 Ownership by different groups of managers and the likelihood of paying dividends

Table 5.5 reports the results using a logit regression of the role of managerial ownership and other factors that determine the decision to pay dividends. The first model examines the relationship between MSO and the likelihood of paying dividends and finds that the likelihood of paying dividends is positively related to MSO. This model also finds that the likelihood of paying dividends is positively related to franked dividends (DFD), board independence (BIND), profitability (ROA), number of analysts (ANST), dividend reinvestment plan (DRP) and retained equity (RETA), and negatively related to volatility of earnings (VOL). The positive significant coefficient of retained equity is consistent with the findings of DeAngelo et al. (2006). An increase in ownership is likely to motivate the managers to pay dividends to maximise their tax credit. The finding of a positive relationship between MSO and the likelihood of paying dividends suggests that firms are more

likely to pay dividends when MSO is high. This is consistent with the tax preference of managers motivating them to pay dividends.

Since different groups of managers have different incentives, and the relationship between MSO and dividend payouts may vary depending on whether shares are owned by the executive directors or the independent directors, this study examines the relationship between ownership by different groups of managers and the likelihood of paying dividends. The second model reports the results for ESO. It is found that the likelihood of paying dividends is also related to ESO. In particular, the coefficient of ESO is positive and significant. Consistent with MSO as a whole it implies that firms are more likely to pay dividends when ownership by the executive directors is high. The same regression also suggests that the likelihood of paying dividends is positively related to franked dividends (DFD), board independence (BIND), profitability (ROA), number of analysts (ANST), dividend reinvestment plan (DRP) and retained equity (RETA), and negatively related to volatility of earnings (VOL).

The third model reports the results for ownership by other groups of directors, that is, independent directors. The insignificant coefficient of ISO suggests that ownership by the independent directors does not influence the likelihood of paying dividends. The coefficients of other variables are qualitatively similar to the first two regressions.

Table 5.5: Relationships between ownership by different groups of managers and the likelihood of paying dividends

	(1)	(2)	(3)
MSO	3.898		
	(0.000)		
ESO		6.608	
		(0.000)	
ISO			1.420
			(0.755)
ETR	0.272	0.279	0.285
	(0.129)	(0.128)	(0.121)
DFD	4.531	4.731	4.442
	(0.000)	(0.000)	(0.000)
BIND	2.923	3.114	2.322
	(0.000)	(0.000)	(0.001)
DISP	0.531	0.499	0.407
	(0.086)	(0.062)	(0.275)
LEV	1.186	1.302	1.389
	(0.289)	(0.155)	(0.224)
ROA	2.961	2.833	2.962
	(0.061)	(0.059)	(0.058)
CASH	-0.571	-0.615	-1.492
	(0.755)	(0.737)	(0.412)
GRW	-0.024	-0.061	-0.039
	(0.823)	(0.619)	(0.765)
VOL	-11.028	-10.565	-10.758
	(0.028)	(0.043)	(0.026)
USUBSP	2.065	2.125	2.107
	(0.144)	(0.104)	(0.142)
ANST	0.430	0.407	0.328
	(0.048)	(0.068)	(0.146)
DRP	1.322	1.287	1.085
	(0.001)	(0.002)	(0.006)
RETA	2.314	2.407	2.642
	(0.002)	(0.001)	(0.000)
INTERCEPT	-5.145	-5.137	-4.240
	(0.009)	(0.008)	(0.034)
McFadden R^2	0.539	0.553	0.522

This table reports the logistic regression results regarding the relationships between MSO, ESO and ISO and the likelihood of paying dividends. Dependent variable is paying dividend dummy variable 1 if the firm pays dividend in a particular year. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ETR = Effective tax rate calculated as the ratio of annual tax expenses and net earnings before interest and taxes; DFD = Franked dividends, a dummy 1 variable if the firm declares franked dividends; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by taking the natural log of the total number of shareholders of a firm; LEV = Debt, calculated as the ratio of the book value of debt and book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation, and the book value of total assets; GRW = Growth rate calculated as the average annual growth rate of a firm's total sales in the preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; ANST = Analysts calculated as the natural log of the maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares a dividend reinvestment plan; RETA = Retained equity calculated as retained earnings scaled by total assets; Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

5.5.2 Ownership by different groups of managers and dividend payouts

This study investigates the relationship between different managerial ownership variables and dividend payouts. Table 5.6 presents the results using OLS regression. The first model examines the relationship between MSO and dividend payouts; it shows a positive significant coefficient for MSO. It suggests that the greater the MSO, the higher the dividend payouts. This is inconsistent with the argument that MSO and dividends could be substitute monitoring mechanisms resulting in a negative relationship. However, the result is consistent with imputation credits motivating managers with incentives to declare higher franked dividends. It is also found that the payment of dividends is positively related to the effective tax rate (ETR), franked dividends (DFD), profitability (ROA), number of analysts (ANST), board independence (BIND), cash position (CASH), dividend reinvestment plan (DRP) and retained equity (RETA), and negatively related to growth (GRW) and volatility of earnings (VOL).

In the same table the second model examines the relationship between ESO and dividend payouts. This study finds a positive significant relationship between ESO and dividend payouts. Such a positive relationship also suggests that ESO and dividends are not substitute monitoring mechanisms. Consistent with MSO as a whole it implies that ESO motivates the executive directors with incentives to declare higher franked dividends. This model also shows that dividend payouts are positively related to an effective tax rate (ETR), franked dividends (DFD), profitability (ROA), dispersion of shareholders (DISP), number of analysts (ANST), board independence (BIND), cash position (CASH), dividend reinvestment plan

(DRP) and retained equity (RETA), and negatively related to growth (GRW) and volatility of earnings (VOL).

The third model examines the relationship between ISO and dividend payouts. For the independent directors, this study fails to find any significant relationship between ISO and dividend payouts. It implies that share ownership by the independent directors does not influence dividend payouts. The coefficients of other variables are qualitatively similar to the first two regressions.

Table 5.6: Relationships between ownership by different groups of managers and dividend payouts

	(1)	(2)	(3)
MSO	0.007		
	(0.057)		
ESO		0.013	
		(0.003)	
ISO			0.004
			(0.633)
ETR	0.002	0.004	0.001
	(0.027)	(0.028)	(0.029)
DFD	0.027	0.022	0.023
	(0.000)	(0.000)	(0.000)
BIND	0.008	0.005	0.007
	(0.082)	(0.098)	(0.157)
DISP	0.003	0.003	0.001
	(0.127)	(0.047)	(0.031)
LEV	-0.004	-0.002	-0.001
	(0.600)	(0.629)	(0.586)
ROA	0.058	0.053	0.049
	(0.003)	(0.001)	(0.003)
CASH	0.212	0.217	0.193
	(0.000)	(0.000)	(0.000)
GRW	-0.001	-0.001	-0.001
	(0.011)	(0.012)	(0.011)
VOL	-0.065	-0.058	-0.061
	(0.076)	(0.079)	(0.106)
USUBSP	-0.009	-0.006	-0.007
	(0.138)	(0.150)	(0.179)
ANST	0.004	0.001	0.002
	(0.012)	(0.089)	(0.067)
DRP	0.002	0.003	0.002
	(0.044)	(0.054)	(0.048)
RETA	0.029	0.022	0.018
	(0.027)	(0.012)	(0.011)
INTERCEPT	-0.007	-0.009	-0.005
	(0.599)	(0.455)	(0.698)
Adjusted R^2	0.483	0.484	0.481

This table reports the logistic regression results of relations between MSO, ESO and ISO and the likelihood of paying dividends. Dependent variable is paying dividend dummy variable 1 if the firm pays dividend in a particular year. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ETR = Effective tax rate calculated as the ratio of annual tax expenses and net earnings before interest and taxes; DFD = Franked dividends, a dummy 1 variable if the firm declares franked dividends; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by the taking the natural log of the total number of shareholders of a firm; LEV = Debt, calculated as the ratio of the book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation, and the book value of total assets; GRW = Growth rate calculated as the average annual growth rate of a firm's total sales in the preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; ANST = Analysts calculated as the natural log of the maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; RETA = Retained equity calculated as retained earnings scaled by total assets; Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

5.5.3 Ownership by different groups of managers, dividend payouts and debt: A simultaneous framework

This section reports the results on the role of managerial ownership in determining dividend payouts using a simultaneous equations system (3 SLS) to control for endogeneity of MSO consistent with Jensen et al. (1992). The results are presented in Table 5.7.

Panel A presents the results of simultaneous determination of MSO, dividend payouts and debt. The results do not suggest a simultaneous relationship between MSO and dividend payouts. Specifically, in the DIVTA equation MSO is positive and significant. This is consistent with the previous findings in Table 5.5. The insignificant coefficient of dividend payouts (DIVTA) in the MSO equation implies that dividend payouts do not influence the level of MSO. In the same equation a negative and significant coefficient has been found for debt (LEV). It suggests that managers do not want to hold shares when the level of debt is high. This is consistent with the findings of Jensen et al. (1992). The insignificant coefficients of dividend payouts and MSO in the LEV equation, suggest that neither dividend payouts nor managerial ownership influences the level of debt.

In Panel B the results of simultaneous determination of ESO, dividend payouts and debt have been presented. The study fails to reveal a simultaneous relationship between ESO and dividend payouts. In particular, ESO is positive and significant in the dividend payouts (DIVTA) equation, which is consistent with the findings of OLS regression results. The coefficients of other variables are consistent

with the results reported using the OLS regression in Table 5.4. It is found from the LEV equation that the level of debt is not influenced either by ESO or by dividends.

The analysis for the simultaneous determination of debts, dividends and ISO reported in Panel C fails to find any simultaneous relationship between ISO and dividend payouts. Specifically, for the independent directors this study finds that ISO does not affect dividends nor do dividends affect ISO. However, it fails to find that ISO and dividends affect the level of debt.

The overall findings suggest that there is a positive relationship between MSO as well as ESO and dividend payouts. However, MSO and ESO are not influenced by dividend payouts. Also there is no significant relationship between ISO and dividend payouts. The positive relationships between MSO and dividend payouts as well as ESO and dividend payouts, once again imply that in Australia's imputation environment, the ownership-dividend payouts relationship is likely to be influenced by the tax induced preferences of the managers, which may outweigh the previously documented agency perspective of dividends. The results also support the argument that executive directors and independent directors have different ownership-dividend incentives.

Table 5.7: Simultaneous determination of ownership by different groups of managers, dividends and debt

	Panel A			Panel B			Panel C		
	DIVTA	MSO	LEV	DIVTA	ESO	LEV	DIVTA	ISO	LEV
DIVTA		0.275	-0.176		0.448	-0.175		0.097	-0.174
		(0.413)	(0.643)		(0.187)	(0.684)		(0.298)	(0.651)
MSO	0.013		-0.007						
	(0.079)		(0.878)						
ESO				0.014		-0.009			
				(0.049)		(0.875)			
ISO							0.011		0.031
							(0.693)		(0.868)
ETR	0.006			0.004			0.002		
	(0.027)			(0.049)			(0.048)		
DFD	0.036			0.027			0.019		
	(0.000)			(0.000)			(0.000)		
BIND	0.013			0.017			0.011		
	(0.108)			(0.126)			(0.172)		
DISP	0.004			0.001			0.002		
	(0.056)			(0.054)			(0.042)		
LEV	-0.008	-0.048		-0.006	-0.045		-0.005	-0.002	
	(0.269)	(0.083)		(0.289)	(0.036)		(0.263)	(0.788)	
ROA	0.063	0.056	-0.428	0.067	0.054	-0.431	0.061	0.013	-0.427
	(0.000)	(0.634)	(0.001)	(0.004)	(0.854)	(0.000)	(0.000)	(0.678)	(0.009)
CASH	0.221			0.249			0.210	0.021	
	(0.000)			(0.000)			(0.000)	(0.248)	
GRW	-0.016			-0.021			-0.001		
	(0.073)			(0.047)			(0.052)		
VOL	-0.069	-0.303	-0.407	-0.061	-0.125	-0.409	-0.067	-0.005	-0.413
	(0.063)	(0.093)	(0.062)	(0.067)	(0.034)	(0.061)	(0.068)	(0.081)	(0.058)
USUBSP	-0.016			-0.018			-0.013		
	(0.073)			(0.108)			(0.134)		
ANST	0.007			0.002			0.003		
	(0.281)			(0.324)			(0.456)		
DRP	0.008			0.006			0.003		
	(0.438)			(0.472)			(0.435)		
RETA	0.035			0.026			0.029		
	(0.000)			(0.000)			(0.000)		
LIQ		0.082			0.036			0.021	
		(0.211)			(0.482)			(0.248)	
INV		-0.118	-0.123		0.129	-0.121		0.018	-0.124
		(0.591)	(0.625)		(0.446)	(0.621)		(0.760)	(0.623)
MVEQ		$-0.215X10^{-5}$			$-0.134X10^{-5}$			$-0.220X10^{-5}$	
		(0.003)			(0.018)			(0.272)	
PPE			0.028			0.027			0.028
			(0.000)			(0.000)			(0.000)
INTERCEPT	-0.015	0.052	-0.115	-0.002	-0.001	-0.115	-0.021	0.008	-0.122
	(0.750)	(0.371)	(0.287)	(0.767)	(0.891)	(0.286)	(0.636)	(0.597)	(0.248)
Adj. R^2	0.474	0.068	0.133	0.475	0.033	0.132	0.473	0.032	0.133

This table reports the simultaneous equations system results regarding managerial share ownership, dividend payouts and debts. Different notations used in the table are defined as follows: DIVTA = Dividends to total assets; MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by taking the natural log of the total number of shareholders of a firm; ETR = Effective tax rate calculated as the ratio of annual tax expenses and net earnings before interest and taxes; DFD = Franked dividends, a dummy variable 1if the firm declares franked dividends; LEV = Debt, calculated as the ratio of the book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items are scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation, and the book value of total assets; GRW = Growth rate calculated as the average annual growth rate of a firm's total sales of the preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of the preceding five years scaled by the book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; RETA = Retained earnings to total assets; ANST = Analysts calculated as the natural log of the maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; INV = Investment, calculated as the ratio of capital expenditure to book value of assets; MVEQ = Natural log of market value of common equity; LIQ = Liquidity calculated as the ratio of cash flow from operations and book value of assets; PPE = Tangible assets calculated as the ratio of property plant and equipment and the book value of assets. Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

5.5.4 Further analysis

This study performs further analysis to check the robustness of the results reported in the previous sections. The relevant results of the further analysis are tabulated in Appendix C of this thesis.

First, the regression results presented in Tables 5.5 and 5.7 are rerun without any ownership variables in order to examine the incremental role of managerial ownership variables in determining dividends. The results are reported in Table C.1 in Appendix C. It is notable that the explanatory power of the regression (adjusted R^2) is lower in the models without any managerial ownership variables than models with the managerial ownership variables. The coefficients of other control variables do not show any qualitative difference from the original findings. The overall result suggests that managerial ownership variables have incremental roles in determining the dividend payouts in addition to other factors that explain the variation in dividend payouts.

Second, this study uses a quadratic specification of the managerial ownership variables, which is consistent with Farinha (2003) and Schooley and Barney (1994). It fails to find any significant result between managerial ownership variables and dividend payouts using nonlinear specification of the managerial ownership variables. The coefficients of MSO and MSO^2, ESO and ESO^2 and ISO and ISO^2 are insignificant. The overall results once again suggest that unlike in the UK and US, a quadratic specification of managerial ownership variables may not be appropriate in Australia to determine the impact of ownership on dividends. The results are presented in Table C.2 in Appendix C.

Third, this study uses an alternative approach to control for the industry differences. In Australia there are a large number of resource companies and around 18% of the samples are resource companies. Accordingly, it uses a resource dummy in all the regressions presented in Table 5.6. A negative significant coefficient has been found for the resource dummy variable in all the regressions. It suggests that non-resource companies pay higher dividends than resource companies. However, the coefficients of MSO and ESO remain positive and significant. The results are presented in Table C.2 in Appendix C.

Fourth, this study examines the relationship between MSO and dividend payouts after incorporating the severity of agency costs. Specifically, it introduces a free cash flow dummy as well as an interaction variable of free cash flow and MSO. The firm-year observations with a cash flow higher than the sample median and growth opportunities lower than the sample median were considered as firms with 'high free cash flow-low growth opportunities' and take the value of 1 and zero otherwise. The coefficient of this dummy variable is positive and significant in all the regressions. The results are reported in Table C.4 in Appendix C. The coefficients of managerial ownership variables are qualitatively similar to the main findings.

Fifth, recognising that the levels of independent director ownership may be too low to affect their incentives, this study also examines the impact of ownership on dividends by all non-executive directors that is, independent directors and

affiliated (grey) directors;[63] this is done by running all the regressions presented in Tables 5.5 to 5.7 using ownership by the non-executive directors instead of MSO, ESO or ISO. The results are presented in Table C.5 in Appendix C. Panels A, B and C present the results of the logit model, OLS model and simultaneous equations system (3 SLS) respectively. The overall results suggest that there is no relationship between ownership by the non-executive directors and the likelihood of paying dividends as well as dividend payouts.

Sixth, a random effect model is employed to address the possibility of a spurious relationship between the dependent and independent variables. This may arise due to the exclusion of any unmeasured explanatory variables. Therefore, this study repeats the analyses for the models with MSO, ESO and ISO using a random effect model, and do not find any qualitative differences to the main findings. That is, this study finds positive and significant coefficients for MSO and ESO, and insignificant coefficients for ISO. The results are presented in Table C.6 in Appendix C.

Finally, this study also examines the relationship between managerial ownership variables and dividend payouts using dividend yield as a dividend payout ratio consistent with Schooley and Barney (1994). The results are presented in Table C.7 in Appendix C. The results are consistent with the main findings. That is, the relationship between MSO and dividend yield as well as ESO and dividend yield, are positive using both OLS regression and the simultaneous equations system. Also

[63] The mean level share ownership by all non-executive directors in the sample is 5.7% in contrast to 6.4% owned by executive directors.

there is no relationship between ISO and dividend yield. The results are presented in Table C.7 in Appendix C.

5.6 CHAPTER SUMMARY

This study empirically explores the relationship between MSO and dividend payouts of Australian companies during the period 2000 to 2006. In Australia a dividend imputation system exists which is likely to motivate the firms with resident shareholders to increase the dividend payouts. This study therefore, attempts to test the agency perspective of dividend payouts for managerial ownership in a dividend imputation environment. Consistent with the two prior empirical chapters, this study also examines the relationship between ownership and dividend payouts for ESO and ISO, separately.

It is found in this study that firms are more likely to pay dividends when MSO as well as ESO is high. Related to this, a positive relationship has been documented between MSO and dividend payouts. It also finds a similar result for ESO. However, this study fails to find any significant relationship between ISO and dividend payouts. Additionally, this study also investigates the simultaneous determination of all the managerial ownership variables, dividend payouts and debt. This study fails to find any simultaneous relationship between ownership by managers as a whole as well as different groups and dividend payouts.

The next chapter, Chapter 6, concludes this thesis. It briefly revisits the three empirical studies and highlights the contributions, offers research implications and outlines the limitations. Finally, it ends with providing direction for further research.

CHAPTER 6

CONCLUSION

6.1 INTRODUCTION

This thesis examines the relationship between MSO and firm performance as well as the relationship between MSO and dividends in Australia during the period 2000 to 2006. It is argued that the characteristics of the Australian corporate governance system and the dividend imputation system suggest that the Australian institutional setting is markedly different from the US and UK, and these differences may have the potential to impact the ownership-performance and ownership-dividends relationships that this thesis examines. Much of the prior literature examines the relationship between MSO and performance as well as dividends using share ownership by all the directors, and do not distinguish between share ownership by the executive directors and by the non-executive directors, in particular the independent directors. It is also posited that executive directors and independent directors have different ownership-performance and ownership-dividends incentives and these are examined separately. This final chapter provides an overview of the three empirical studies and the conclusions reached. The chapter also outlines the contributions, presents the research implications and the limitations, and gives directions for further research.

6.2 OVERVIEW AND CONCLUSION

6.2.1 Managerial share ownership and firm performance

The first empirical study in Chapter 3 investigates the relationship between MSO and performance of 1273 firm-year observations of the top 300 ASX listed firms in the period 2000 to 2006. It is argued that different groups of managers – executive directors and independent directors – have different ownership-performance incentives and it examines the relationship empirically. Performance is measured by Q and earnings. This study examines the relationship between MSO and performance using three regression techniques: an OLS regression, an IV regression and a simultaneous equations system (3 SLS). This study also addresses a number of methodological limitations in prior Australian literature. In particular, it uses a much larger sample with a panel dataset and addresses the issue of endogeneity and reverse-causality for a nonlinear specification of MSO. It initially finds a negative relationship between MSO and performance (measured by both Q and earnings) up to a certain point, followed by a positive relationship (U-shaped relationship) both before and after controlling for endogeneity and reverse-causality. It is also found that the relationship is bidirectional, that is, performance affects MSO but only when Q is used to measure performance. The analysis of the different groups of managers reveals a U-shaped relationship between ESO and performance. This relationship is also a bidirectional relationship when performance is measured by Q. As posited, no significant relationship is found between ISO and performance.

The finding of a nonlinear U-shaped relationship between MSO and performance is in marked contrast to prior US and UK studies. Various Australian institutional features including high ownership concentration, relatively passive

block holders, very low participation in shareholder proxy votes and a less active market for corporate control, suggest that managers do not need a particularly large shareholding to derive 'private benefits of control. Consistent with the above, the empirical findings suggest that in Australia a negative ownership-performance relationship dominates at lower levels of ownership. After a certain level of ownership, a relationship consistent with incentive alignment is documented. The results of this study also suggest that executive directors and independent directors have different ownership-performance incentives.

6.2.2 Managerial share ownership, discretionary accruals and adjusted earnings

The second empirical study presented in Chapter 4 first examines the relationship between MSO and discretionary accruals. Since earnings as a performance measure may be affected by discretionary accruals, an accruals adjusted performance measure is also used to re-examine the MSO-performance relationship. These relationships are examined for ESO and ISO separately. This study uses 1154 firm-year observations of the top 300 ASX listed firms in the period 2000 to 2006. An OLS regression is used to examine the MSO-discretionary accruals relationship. Consistent with Chapter 3, the MSO-adjusted earnings relationship is examined using an OLS regression, an IV regression and a simultaneous equations system (3 SLS). This study finds a positive relationship between MSO and the absolute value of discretionary accruals up to a certain level of ownership followed by a negative relationship (inverse U-shaped). A similar pattern of relationship has been found between ESO and discretionary accruals as for MSO as a whole. However, no significant relationship has been found for ISO. The results of the relationship between MSO and adjusted earnings once again

suggest a U-shaped relationship both before and after controlling for endogeneity and reverse-causality. In particular, a negative relationship is documented between MSO and adjusted earnings followed by a positive relationship. The results in respect of ESO-adjusted earnings show a similar relationship as is documented for MSO-adjusted earnings as a whole. It is also found that adjusted earnings affect MSO as well as ESO. That is, the relationships are bidirectional. As posited, no significant relationship is found between ISO and adjusted earnings.

The finding of a nonlinear inverse U-shaped relationship between MSO and discretionary accruals is in marked contrast to prior research. It once again suggests that the features of the wider corporate governance system may mean that managers achieve 'practical control' at relatively low levels of MSO in Australia. Therefore, entrenchment effects are likely to be present at lower levels of the MSO-discretionary accruals relationship than previously documented. The MSO-discretionary accruals relationship also supports the argument that using adjusted earnings as a measure of performance is timely. A nonlinear U-shaped relationship between MSO and adjusted earnings corroborates the findings in Chapter 3. Additionally the findings of MSO-adjusted earnings also imply that the failure to see a bidirectional relationship between MSO and earnings in Chapter 3 may be due to the distortion caused by discretionary accruals which managers are aware of. In contrast, adjusted earnings reflect 'true' financial performance which is more likely to be related to managerial investment in the firms they run.

6.2.3 Managerial share ownership and dividends

The final empirical study presented in Chapter 5 investigates the relationship between MSO and the likelihood of paying dividends as well as dividend payouts, of 1089 firm-year observations of the top 300 ASX listed firms in the period 2000 to 2006. It also examines the same relationship for ESO and ISO separately. This study uses three regression techniques: a logit regression, an OLS regression and a simultaneous equations system (3 SLS). A positive relationship is found between MSO and dividend payouts as well as ESO and dividend payouts. That is, firms are more likely to pay dividends when MSO as well as ownership by the executive directors is high. However, this study fails to find any significant relationship between ISO and dividend payouts. Since the direction of causality between MSO and dividend payouts can be related to each other, this study also investigates the simultaneous determination of MSO and dividend payouts. It once again finds a positive relationship between MSO as well as ESO and dividend payouts. However, it fails to find that either MSO or ESO are influenced by dividend payouts. The simultaneous determination of ISO and dividend payouts does not suggest any significant relationship between these variables.

The overall findings of a positive relationship between MSO and the likelihood of paying dividends as well as dividend payouts, suggest that in an imputation environment the ownership-dividends relationship is likely to be influenced by the tax induced preferences of the managers, which may outweigh the previously documented agency perspective of dividends. The results also support the argument that executive directors and independent directors have different

ownership-dividends incentives. Therefore, examining the relationship for ESO and ISO separately is appropriate.

6.3 CONTRIBUTIONS

6.3.1 Managerial share ownership and firm performance

The first empirical study examining the relationship between MSO and performance makes several contributions. First, this study presents some unique results that are argued to be consistent with the features of the wider Australian corporate governance environment; specifically that managers have the potential to derive private benefits and maintain 'practical control' at relatively low levels of ownership. This implies that entrenchment effects are likely to be present at lower levels of MSO than previously documented for the MSO-performance relationship. Second, whilst prior work focuses on MSO as a whole, it argues that executive and independent directors have different incentives, and examines the relationship separately between ESO and performance and ISO and performance. The findings from this study support such differential incentives. Third, it uses a much larger dataset compared with the previous Australian studies and addresses some methodological limitations of previous Australian studies.

6.3.2 Managerial share ownership, discretionary accruals and adjusted earnings

The second empirical study examines the relationship between MSO and discretionary accruals as well as performance measured by adjusted earnings. There are three key contributions of this study. First, this study examines the relationship between MSO and discretionary accruals in the context of Australia and reports some unique results; these are consistent with the wider Australian corporate

governance setting and may allow managers to maintain 'practical control' and gain private benefits at relatively low levels of ownership. This is reflected in managerial contracting behaviour. Second, this study examines the relationship between ownership by managers and performance using earnings adjusted to mitigate potential earnings management measured by discretionary accruals. The findings of a bidirectional relationship between ownership and performance measured by adjusted earnings supports the argument for the need to recognise the possibility of earnings management. Third, this study once again argues for differential incentives between executive directors and independent directors for ownership-discretionary accruals and ownership-adjusted earnings relationships, and presents some results that support such differential incentives.

6.3.3 Managerial share ownership and dividends

The third and final empirical study examines the relationship between MSO and dividend payouts and contributes to the literature in three ways. First, this study examines the agency perspective of dividends in a full imputation environment and presents some unique and robust results which imply that, in Australia, the incentives associated with the dividends imputation system outweigh incentives associated with the agency perspective of dividends. Second, whilst prior work examines the relationship by taking MSO as a whole, it is argued that executive and independent directors have differential incentives that may influence the relationship between ownership and dividend payouts; it examines the relationship separately for ESO and ISO. Third, given that direction of causality between MSO and dividend payouts may be related to each other, this study also examines the relationship

between MSO and dividends in a full imputation environment under a simultaneous framework.

6.4 RESEARCH IMPLICATIONS

The thesis has several implications. The findings of this thesis may help to better understand the impact of MSO in reducing agency conflict. An implication of the ownership-performance study is that the ownership-performance relationship is context specific with the wider corporate governance systems impacting on the theorised incentive effects. The findings of the ownership-dividends study suggest that given the tax preference of shareholders as well as share owning managers, dividends in a full imputation environment and ownership by managers may not be substitute monitoring mechanisms to reduce agency costs. Additionally, the overall findings of no relationship between ISO and performance as well as dividend payouts in this thesis imply that independent directors in Australia have a high degree of independence and may be immune to the theorised incentive alignment or entrenchment effects associated with share ownership. This result creates questions about the effectiveness of ownership by the independent directors to align their interests with the shareholders.

6.5 LIMITATIONS

This thesis has some limitations that need to be noted. First, it uses MSO as a proxy for the total managerial ownership; there are other proxies for the total managerial ownership (for example, managerial stock options etc.).[64] Gul and Tsui

[64]The Australian Accounting Standards Board has only recently mandated recognition of the expense of executive stock options in financial reports, with the adoption of 'AASB 2: Share-based Payment' as of January 1, 2005. Therefore, until mandatory recognition of stock options was introduced, investors and other users of financial statements with an interest in stock options primarily relied on

(2001) argue that directors' shareholdings are an appropriate proxy for the incentives of directors' as well as any members of senior management who are not on the board. In the absence of detailed available data relating to stock options, this thesis follows Gul and Tsui (2001) and the related US, UK and Australian literature, and uses directors' shareholdings for this purpose. Second, this study uses panel data for all the empirical studies. One of the major limitations of panel data with respect to the relationship between ownership and performance, is that this kind of data considers differences within firm and does not consider the difference between observations (Zhou, 2001). Hence such a limitation is applicable to the findings of the ownership and performance relationship in Chapters 3 and 4. Third, in the absence of publicly available information in Australia, this thesis does not control for institutional ownership and therefore, potential monitoring by the institutional shareholders. However, this thesis controls for the interests of block holders and board independence which is likely to mitigate the issue of monitoring. Fourth, the second empirical study does not use the most commonly used modified Jones model to estimate discretionary accruals, due to extensive data requirements. Instead it uses a parsimonious model developed by Chan et al. (2006). However, in a further analysis, it also uses the model in Warfield et al. (1995) to estimate discretionary accruals. Fifth, with respect to the third empirical study, this thesis follows previous studies (see for example, Farinha, 2003; Jensen et al., 1992) and uses regular dividend payouts, and does not consider special dividends or share repurchases.

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the disclosure of statutory information to evaluate the appropriateness of executive stock options in corporate remuneration decisions. However, Chalmers and Koh (2005) show that prior to the introduction of ASX corporate governance principles in 2003, more than 50% of the top 500 firms required to disclose the value of director and top 5 executive options under section 300A of the Corporation Act, did not comply with this disclosure requirement.

6.6 FURTHER RESEARCH

The empirical studies undertaken in this thesis raise several ideas for extending the current research. These are discussed below:

As the recognition of employee stock option plans in financial statements has been made mandatory with the introduction of 'AASB 2: Share-based Payment' in 2005, a further study using more recent data, can be conducted to consider the impact of managerial stock option plans and to see whether the results differ significantly from the results presented in this thesis.

This thesis uses MSO to test the incentive alignment and entrenchment argument. Morck et al. (1988) argues that there are other factors through which managers can make themselves entrenched in a firm. Some of those factors may include CEO tenure, CEO age, directors appointed by the CEO, CEO duality. Previous research in the context of the US has considered the impacts of some of those factors (see for example, Shivdasani and Yermack, 1999; Barker III and Mueller, 2002; Baliga et al., 1996). Given that the Australian corporate governance system is markedly different from the US, it may be appropriate to model the impact of those factors on firm performance as well as dividends in Australia.

The pattern of MSO as well as the nature of the agency problem is expected to be different in unlisted firms. For example, unlike in listed firms, the levels of MSO in unlisted firms are likely to vary between 0% and 100%. Therefore, it may be interesting to replicate these studies on a sample of unlisted firms.

As indicated earlier, an implication of the results of the ownership-performance study is that the ownership-performance relationship is context specific with the wider corporate governance systems impacting on the theorised incentive effects. Accordingly, a cross country study of the ownership-performance relationship using data from countries with a range of governance systems, is warranted.

6.7 CHAPTER SUMMARY

This chapter has provided an overview of the three empirical studies with respect to the relationships between MSO and firm performance, and MSO and dividends, and the conclusions reached. It has also discussed contributions and possible research implications of the thesis. Finally, it acknowledges limitations as well as proposes some directions for further research.

The overall thesis presents some unique and robust results relating to the ownership-performance and ownership-dividends relationships which are argued to be a result of certain Australian institutional features that are clearly different to those in the US and UK. The results also support the argument that executive directors and independent directors have different ownership-performance and ownership-dividends incentives and suggest that independent directors may be immune to the theorised incentive alignment or entrenchment effects associated with share ownership.

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APPENDICES

APPENDIX A

Table A.1: Relationship between MSO and performance (Alternative definitions of performance)

Panel A: OLS regression		
	MB	EBITDA
MSO	-2.105	-0.093
	(0.005)	(0.051)
MSO^2	5.618	0.219
	(0.000)	(0.027)
LEV	-0.058	-0.083
	(0.758)	(0.000)
INV	2.318	0.045
	(0.000)	(0.623)
USUBSP	-0.335	0.062
	(0.108)	(0.000)
BIND	0.295	0.071
	(0.364)	(0.209)
AGE	-0.153	0.006
	(0.028)	(0.157)
ASST	-0.434	0.095
	(0.000)	(0.000)
Intercept	6.675	-0.713
	(0.000)	(0.000)
Adj. R^2	0.152	0.156
Panel B: IV regression		
MSO	-2.208	-0.196
	(0.022)	(0.049)
MSO^2	5.872	0.417
	(0.000)	(0.002)
LEV	-0.140	-0.083
	(0.443)	(0.001)
INV	3.709	0.193
	(0.004)	(0.233)
USUBSP	-0.161	0.092
	(0.577)	(0.106)
BIND	0.835	0.183
	(0.153)	(0.076)
AGE	-0.135	0.006
	(0.049)	(0.038)
ASST	-0.342	0.089
	(0.000)	(0.000)
Intercept	5.468	-0.685
	(0.000)	(0.000)
Adj. R^2	0.119	0.138

(cont)

Table A.1 (cont)

Panel C: Simultaneous equations system (3 SLS)

	MB	MSO	INV	EBITDA	MSO	INV
MB		0.031	0.010			
		(0.000)	(0.000)			
EBITDA					0.004	-0.113
					(0.813)	(0.129)
MSO	-2.166		0.139	-0.189		0.124
	(0.022)		(0.003)	(0.057)		(0.009)
MSO^2	5.797		-0.284	0.402		-0.226
	(0.003)		(0.000)	(0.041)		(0.008)
LEV	-0.142	-0.032		-0.084	-0.048	
	(0.435)	(0.116)		(0.000)	(0.019)	
INV	3.830	-0.155		0.216	-0.062	
	(0.003)	(0.283)		(0.170)	(0.685)	
USUBSP	-0.157			0.092		
	(0.582)			(0.213)		
BIND	0.812			0.182		
	(0.160)			(0.011)		
AGE	-0.131			0.006		
	(0.054)			(0.485)		
ASST	-0.343			0.090		
	(0.000)			(0.000)		
VOL		0.001	0.110		0.198	0.166
		(0.893)	(0.015)		(0.026)	(0.000)
LIQ		0.072	0.050		-0.062	0.177
		(0.045)	(0.002)		(0.745)	(0.031)
MVEQ		$-0.209X10^{-5}$			$-0.177X10^{-5}$	
		(0.000)			(0.004)	
Intercept	5.819	0.024	0.087	-0.707	0.090	0.118
	(0.000)	(0.546)	(0.000)	(0.000)	(0.029)	(0.000)
Adj. R^2	0.119	0.076	0.107	0.136	0.069	0.129

The above table reports the regression results relating to MSO and performance. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; MB = Market to book calculated as market value of equity to book value of equity; EBITDA = Earnings before interest, tax depreciation and amortisation scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt to book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix A (cont)

Table A.2: Relationship between ESO and performance (Alternative definitions of performance)

Panel A: OLS regression		
	MB	EBITDA
ESO	-0.911	-0.175
	(0.064)	(0.003)
ESO^2	1.015	0.626
	(0.042)	(0.000)
LEV	-0.043	-0.081
	(0.695)	(0.000)
INV	2.107	0.048
	(0.007)	(0.598)
USUBSP	-0.336	0.058
	(0.324)	(0.227)
BIND	0.209	-0.051
	(0.471)	(0.178)
AGE	-0.130	0.005
	(0.000)	(0.219)
ASST	-0.389	0.097
	(0.000)	(0.000)
Intercept	6.138	-0.735
	(0.000)	(0.000)
Adj. R^2	0.135	0.163
Panel B: IV regression		
ESO	-1.182	-0.176
	(0.063)	(0.040)
ESO^2	1.467	0.628
	(0.058)	(0.000)
LEV	-0.112	-0.081
	(0.543)	(0.001)
INV	3.053	0.178
	(0.017)	(0.279)
USUBSP	-0.164	0.088
	(0.574)	(0.246)
BIND	0.848	0.174
	(0.148)	(0.073)
AGE	-0.107	0.006
	(0.131)	(0.051)
ASST	-0.289	0.094
	(0.000)	(0.000)
Intercept	4.873	-0.716
	(0.000)	(0.000)
Adj. R^2	0.109	0.147

(cont)

Table A.2 (cont)

Panel C: Simultaneous equations system

	MB	ESO	INV	EBITDA	ESO	INV
MB		0.022	0.009			
		(0.000)	(0.000)			
EBITDA					0.011	-0.128
					(0.828)	(0.378)
ESO	-1.127		0.084	-0.179		0.105
	(0.038)		(0.183)	(0.025)		(0.091)
ESO^2	1.562		-0.221	0.637		-0.201
	(0.054)		(0.094)	(0.048)		(0.131)
LEV	-0.111	-0.040		-0.082	-0.051	
	(0.543)	(0.007)		(0.000)	(0.000)	
INV	3.186	0.127		0.202	0.193	
	(0.012)	(0.219)		(0.189)	(0.078)	
USUBSP	-0.154			0.088		
	(0.593)			(0.013)		
BIND	0.832			0.174		
	(0.153)			(0.015)		
AGE	-0.105			0.005		
	(0.134)			(0.539)		
ASST	-0.290			0.094		
	(0.000)			(0.000)		
VOL		-0.213	0.093		-0.075	0.149
		(0.002)	(0.033)		(0.244)	(0.000)
LIQ		-0.059	0.048		-0.035	0.191
		(0.423)	(0.003)		(0.799)	(0.018)
MVEQ		$-0.209X10^{-5}$			$-0.105X10^{-5}$	
		(0.004)			(0.019)	
Intercept	5.209	0.015	0.094	-0.741	0.061	0.121
	(0.000)	(0.609)	(0.000)	(0.000)	(0.044)	(0.000)
Adj. R^2	0.109	0.067	0.102	0.146	0.033	0.129

The above table reports the regression results regarding ESO and performance. Different notations used in the table are defined as follows: ESO = Percentage of ordinary shares owned by the executive directors of the board; MB = Market to book calculated as market value of equity to book value of equity; EBITDA = Earnings before interest, tax depreciation and amortisation scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix A (cont)

Table A.3: Relationship between ISO and performance (Alternative definitions of performance)

Panel A: OLS regression		
	MB	EBITDA
ISO	-2.401	-0.279
	(0.118)	(0.148)
ISO^2	6.837	0.454
	(0.148)	(0.228)
LEV	-0.052	-0.083
	(0.647)	(0.000)
INV	2.088	0.033
	(0.004)	(0.713)
USUBSP	-0.364	0.059
	(0.217)	(0.482)
BIND	0.197	-0.062
	(0.466)	(0.137)
AGE	-0.152	0.006
	(0.000)	(0.202)
ASST	-0.463	0.094
	(0.000)	(0.000)
Intercept	6.940	-0.702
	(0.000)	(0.000)
Adj. R^2	0.134	0.157
Panel B: IV regression		
ISO	-2.214	-0.548
	(0.145)	(0.178)
ISO^2	5.035	1.021
	(0.236)	(0.238)
LEV	-0.134	-0.083
	(0.047)	(0.000)
INV	3.041	0.145
	(0.000)	(0.399)
USUBSP	-0.211	0.087
	(0.379)	(0.314)
BIND	0.721	0.199
	(0.305)	(0.057)
AGE	-0.135	0.008
	(0.000)	(0.068)
ASST	-0.376	0.089
	(0.000)	(0.000)
Intercept	5.856	-0.662
	(0.000)	(0.000)
Adj. R^2	0.099	0.136

(cont)

Table A.3 (cont)

Panel C: Simultaneous equations system (3 SLS)

	Q	ISO	INV	EBITDA	ISO	INV
MB		0.011	0.009			
		(0.007)	(0.000)			
EBITDA					-0.072	-0.137
					(0.516)	(0.365)
ISO	-2.062		0.106	-0.536		0.033
	(0.238)		(0.231)	(0.117)		(0.729)
ISO^2	4.705		-0.229	0.966		-0.074
	(0.181)		(0.197)	(0.204)		(0.699)
LEV	-0.135	-0.004		-0.084	-0.009	
	(0.461)	(0.773)		(0.000)	(0.521)	
INV	3.165	-0.169		0.167	-0.159	
	(0.013)	(0.076)		(0.280)	(0.112)	
USUBSP	-0.205			0.087		
	(0.478)			(0.292)		
BIND	0.704			0.198		
	(0.232)			(0.006)		
AGE	-0.133			0.007		
	(0.052)			(0.432)		
ASST	-0.376			0.089		
	(0.000)			(0.000)		
VOL		-0.126	0.090		-0.059	0.147
		(0.049)	(0.037)		(0.307)	(0.000)
LIQ		-0.026	0.045		0.056	0.198
		(0.266)	(0.004)		(0.656)	(0.016)
MVEQ		$-0.653X10^{-5}$			$-0.531X10^{-5}$	
		(0.109)			(0.191)	
Intercept	6.177	0.011	0.096	-0.689	0.041	0.125
	(0.000)	(0.669)	(0.000)	(0.000)	(0.132)	(0.000)
Adj. R^2	0.099	0.029	0.094	0.136	0.027	0.122

The above table reports the regression results regarding ISO and performance. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; MB = Market to book calculated as market value of equity to book value of equity; EBITDA = Earnings before interest, tax depreciation and amortisation scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix A (cont)

Table A.4: Relationship between ownership by different groups of managers and performance (Piecewise regression)

	Q	ROA
Panel A: MSO		
MSO1	-9.667	-0.405
	(0.001)	(0.423)
MSO2	0.411	0.332
	(0.497)	(0.035)
MSO3	0.789	-0.291
	(0.384)	(0.175)
LEV	-0.130	-0.066
	(0.373)	(0.002)
INV	2.091	0.006
	(0.000)	(0.812)
USUBSP	-0.208	-0.014
	(0.128)	(0.569)
BIND	0.212	0.052
	(0.039)	(0.161)
AGE	-0.123	-0.004
	(0.000)	(0.015)
ASST	-0.411	0.132
	(0.000)	(0.000)
Intercept	6.064	-0.810
	(0.000)	(0.000)
Adj. R^2	0.202	0.179
Panel B: ESO		
ESO1	-10.139	0.373
	(0.000)	(0.365)
ESO2	2.045	-0.227
	(0.008)	(0.115)
ESO3	-1.495	0.561
	(0.119)	(0.192)
LEV	-0.115	-0.093
	(0.456)	(0.000)
INV	1.959	0.007
	(0.001)	(0.889)
USUBSP	-0.237	0.032
	(0.132)	(0.168)
BIND	0.149	0.074
	(0.142)	(0.026)
AGE	-0.134	-0.002
	(0.000)	(0.795)
ASST	-0.376	0.087
	(0.000)	(0.000)
Intercept	5.756	-0.729
	(0.000)	(0.000)
Adj. R^2	0.191	0.171

(cont)

Table A.4 (cont)

Panel C: ISO

	Q	ROA
ISO1	-7.795	0.594
	(0.112)	(0.139)
ISO2	-2.418	0.146
	(0.193)	(0.484)
ISO3	5.464	-0.347
	(0.228)	(0.380)
LEV	-0.031	-0.092
	(0.829)	(0.001)
INV	2.026	0.028
	(0.000)	(0.736)
USUBSP	-0.214	0.046
	(0.199)	(0.231)
BIND	0.264	0.084
	(0.004)	(0.002)
AGE	-0.107	-0.002
	(0.000)	(0.718)
ASST	-0.355	0.087
	(0.000)	(0.000)
Intercept	5.431	-0.723
	(0.000)	(0.000)
Adj. R^2	0.197	0.168

The above table reports the regression results regarding ownership by different groups of managers and performance. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; MSO1 = MSO if 0.00 <MSO<0.05; 0.05 if MSO$\geq$0.05; MSO2 = 0.00 if MSO$\leq$0.05; MSO – 0.05 if 0.05<MSO<0.25; 0.20 if MSO$\geq$0.25; MSO3 = MSO – 0.25 if 0.25<MSO<1.00; 0.00 if MSO $\leq$ 0.25; ESO = Percentage of ordinary shares owned by the executive directors of the board; ESO1 = ESO if 0.00 <ESO<0.05; 0.05 if ESO$\geq$0.05; ESO2 = 0.00 if ESO$\leq$0.05; ESO – 0.05 if 0.05<ESO<0.25; 0.20 if ESO$\geq$0.25; ESO3 = ESO – 0.25 if 0.25<ESO<1.00; 0.00 if ESO $\leq$ 0.25; ISO = Percentage of ordinary shares owned by the independent directors of the board; ISO1 = ISO if 0.00 <ISO<0.05; 0.05 if ISO$\geq$0.05; ISO2 = 0.00 if ISO$\leq$0.05; ISO – 0.05 if 0.05<ISO<0.25; 0.20 if ISO$\geq$0.25; ISO3 = ISO – 0.25 if 0.25<ISO<1.00; 0.00 if ISO $\leq$ 0.25; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix A (cont)

Table A.5: Relationship between MSO and performance with resource a dummy

Panel A: OLS regression		
	Q	ROA
MSO	-1.398	-0.043
	(0.005)	(0.051)
MSO^2	2.793	0.172
	(0.000)	(0.089)
LEV	-0.044	-0.088
	(0.731)	(0.000)
INV	1.606	0.133
	(0.000)	(0.315)
USUBSP	-0.069	0.087
	(0.612)	(0.277)
BIND	0.341	0.213
	(0.119)	(0.001)
AGE	-0.152	0.002
	(0.001)	(0.843)
ASST	-0.409	0.079
	(0.000)	(0.000)
RS	-0.113	-0.005
	(0.024)	(0.053)
Intercept	5.488	-0.729
	(0.000)	(0.000)
Adj. R^2	0.134	0.138
Panel B: IV regression		
MSO	-1.335	-0.164
	(0.034)	(0.025)
MSO^2	3.010	0.359
	(0.005)	(0.045)
LEV	-0.046	-0.088
	(0.710)	(0.000)
INV	2.802	0.133
	(0.000)	(0.315)
USUBSP	0.096	0.087
	(0.613)	(0.227)
BIND	0.607	0.213
	(0.113)	(0.001)
AGE	-0.111	0.002
	(0.015)	(0.843)
ASST	-0.329	0.079
	(0.000)	(0.000)
RS	-0.138	-0.005
	(0.075)	(0.073)
Intercept	4.467	-0.639
	(0.000)	(0.000)
Adj. R^2	0.103	0.112

(cont)

Table A.5 (cont)

Panel C: Simultaneous equations system (3 SLS)

	Q	MSO	INV	ROA	MSO	INV
Q		0.026	0.028			
		(0.004)	(0.031)			
ROA					0.093	-0.171
					(0.614)	(0.129)
MSO	-1.324		0.104	-0.160		0.096
	(0.033)		(0.030)	(0.025)		(0.044)
MSO^2	3.004		-0.235	0.351		-0.186
	(0.004)		(0.004)	(0.046)		(0.028)
LEV	-0.045	-0.046		-0.089	-0.052	
	(0.708)	(0.026)		(0.000)	(0.011)	
INV	2.932	-0.199		0.119	0.078	
	(0.000)	(0.144)		(0.365)	(0.632)	
USUBSP	0.098			0.087		
	(0.602)			(0.236)		
BIND	0.594			0.212		
	(0.119)			(0.001)		
AGE	-0.109			0.001		
	(0.015)			(0.894)		
ASST	-0.328			0.079		
	(0.000)			(0.000)		
VOL		0.112	0.082		0.272	0.132
		(0.274)	(0.077)		(0.115)	(0.005)
LIQ		-0.051	0.057		-0.137	0.213
		(0.157)	(0.000)		(0.433)	(0.003)
MVEQ		$-0.197X10^{-5}$			$-0.166X10^{-5}$	
		(0.002)			(0.007)	
RS	-0.136	0.062	0.037	-0.005	0.072	0.035
	(0.078)	(0.000)	(0.000)	(0.069)	(0.172)	(0.000)
Intercept	4.682	0.125	0.026	-0.651	0.162	0.048
	(0.000)	(0.000)	(0.008)	(0.000)	(0.000)	(0.000)
Adj. R^2	0.102	0.057	0.072	0.113	0.062	0.098

The above table reports the regression results regarding MSO and performance using a resource dummy variable in the original model. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; RS = Resource dummy variable 1 if the company is a resource company; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix A (cont)

Table A.6: Relationship between ESO and performance with a resource dummy

Panel A: OLS regression		
	Q	ROA
ESO	-0.204	-0.239
	(0.065)	(0.028)
ESO^2	1.240	0.717
	(0.073)	(0.001)
LEV	-0.047	-0.086
	(0.713)	(0.000)
INV	1.561	0.127
	(0.000)	(0.657)
USUBSP	-0.073	0.047
	(0.597)	(0.133)
BIND	0.315	0.062
	(0.152)	(0.073)
AGE	-0.143	0.001
	(0.002)	(0.895)
ASST	-0.383	0.087
	(0.000)	(0.000)
RS	-0.104	-0.004
	(0.057)	(0.704)
Intercept	5.192	-0.710
	(0.000)	(0.000)
Adj. R^2	0.126	0.145
Panel B: IV regression		
ESO	0.062	0.354
	(0.074)	(0.013)
ESO^2	1.497	0.945
	(0.038)	(0.002)
LEV	-0.056	-0.087
	(0.647)	(0.000)
INV	2.589	-0.131
	(0.000)	(0.313)
USUBSP	0.087	0.079
	(0.651)	(0.215)
BIND	0.630	0.202
	(0.102)	(0.002)
AGE	-0.102	-0.002
	(0.031)	(0.792)
ASST	-0.303	0.080
	(0.000)	(0.000)
RS	-0.124	-0.002
	(0.010)	(0.082)
Intercept	4.170	-0.635
	(0.000)	(0.000)
Adj. R^2	0.096	0.123

(cont)

Table A.6 (cont)

Panel C: Simultaneous equations system (3 SLS)

	Q	ESO	INV	ROA	ESO	INV
Q		0.024	0.017			
		(0.000)	(0.000)			
ROA					0.022	-0.179
					(0.865)	(0.228)
ESO	-0.028		0.093	-0.356		0.088
	(0.072)		(0.140)	(0.012)		(0.159)
ESO^2	1.558		-0.239	0.949		-0.163
	(0.036)		(0.071)	(0.001)		(0.225)
LEV	-0.058	-0.049		-0.087	-0.056	
	(0.634)	(0.000)		(0.000)	(0.000)	
INV	2.716	0.119		0.116	0.180	
	(0.001)	(0.226)		(0.370)	(0.122)	
USUBSP	0.091			0.079		
	(0.633)			(0.214)		
BIND	0.619			0.201		
	(0.105)			(0.002)		
AGE	-0.102			-0.003		
	(0.029)			(0.733)		
ASST	-0.302			0.081		
	(0.000)			(0.000)		
VOL		-0.171	0.062		-0.047	0.113
		(0.020)	(0.181)		(0.499)	(0.011)
LIQ		-0.054	0.055		-0.032	0.220
		(0.235)	(0.000)		(0.499)	(0.002)
MVEQ		$-0.115X10^{-5}$			$-0.893X10^{-5}$	
		(0.011)			(0.046)	
RS	-0.122	0.038	0.038	-0.002	0.045	0.035
	(0.013)	(0.001)	(0.000)	(0.019)	(0.000)	(0.000)
Intercept	4.392	0.054	0.029	-0.643	0.087	0.049
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adj. R^2	0.096	0.044	0.067	0.124	0.038	

The above table reports the regression results regarding ESO and performance using a resource dummy variable in the original model. Different notations used in the table are defined as follows: ESO = Percentage of ordinary shares owned by the executive directors of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; RS = Resource dummy variable 1 if the company is a resource company; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix A (cont)

Table A.7: Relationship between ISO and performance with a resource dummy

Panel A: OLS regression		
	Q	ROA
ISO	-0.337	-0.105
	(0.687)	(0.423)
ISO^2	1.001	0.219
	(0.548)	(0.409)
LEV	-0.044	-0.088
	(0.732)	(0.000)
INV	1.538	0.172
	(0.000)	(0.519)
USUBSP	-0.067	0.052
	(0.625)	(0.117)
BIND	0.307	0.068
	(0.163)	(0.053)
AGE	-0.143	0.003
	(0.002)	(0.697)
ASST	-0.396	0.086
	(0.000)	(0.000)
RS	-0.112	-0.008
	(0.033)	(0.047)
Intercept	5.314	-0.705
	(0.000)	(0.000)
Adj. R^2	0.125	0.135
Panel B: IV regression		
ISO	-0.128	-0.314
	(0.911)	(0.102)
ISO^2	0.087	0.612
	(0.869)	(0.112)
LEV	-0.047	-0.088
	(0.705)	(0.000)
INV	2.554	-0.172
	(0.001)	(0.193)
USUBSP	0.084	0.085
	(0.659)	(0.229)
BIND	0.599	0.223
	(0.132)	(0.000)
AGE	-0.105	0.002
	(0.019)	(0.748)
ASST	-0.326	0.079
	(0.000)	(0.000)
RS	-0.139	-0.006
	(0.074)	(0.651)
Intercept	4.426	-0.629
	(0.000)	(0.000)
Adj. R^2	0.093	0.107

(cont)

Table A.7 (cont)

Panel C: Simultaneous equations system (3 SLS)

	Q	ISO	INV	ROA	ISO	INV
Q		0.006	0.017			
		(0.302)	(0.000)			
ROA					0.042	-0.192
					(0.729)	(0.313)
ISO	-0.205		0.004	-0.309		0.018
	(0.857)		(0.867)	(0.106)		(0.845)
ISO^2	0.231		-0.057	0.595		-0.012
	(0.921)		(0.754)	(0.124)		(0.847)
LEV	-0.047	-0.009		-0.088	-0.012	
	(0.699)	(0.478)		(0.000)	(0.391)	
INV	2.682	-0.187		0.158	-0.189	
	(0.000)	(0.135)		(0.229)	(0.173)	
USUBSP	0.089			0.085		
	(0.639)			(0.168)		
BIND				-0.222		
				(0.000)		
AGE				0.002		
				(0.802)		
ASST	-0.326			0.079		
	(0.000)			(0.000)		
VOL		-0.073	0.059		-0.048	0.109
		(0.272)	(0.199)		(0.441)	(0.015)
LIQ		0.016	0.050		0.023	0.226
		(0.498)	(0.002)		(0.840)	(0.001)
MVEQ		$-0.612X10^{-5}$			$-0.551X10^{-5}$	
		(0.134)			(0.173)	
RS	-0.137	0.027	0.038	-0.006	0.028	0.034
	(0.078)	(0.104)	(0.000)	(0.637)	(0.000)	(0.000)
Intercept	4.639	0.058	0.031	-0.643	0.052	0.052
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Adj. R^2	0.093	0.023	0.063	0.108	0.028	0.093

The above table reports the regression results regarding ISO and performance using a resource dummy variable in the original model. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; RS = Resource dummy variable 1 if the company is a resource company; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix A (cont)

Table A.8: Relationships between ownership by different groups of managers and performance (Random effect)

	Q	ROA	Q	ROA	Q	ROA
MSO	-1.298	-0.069				
	(0.050)	(0.059)				
MSO^2	2.128	0.026				
	(0.029)	(0.082)				
ESO			-0.155	-0.057		
			(0.056)	(0.065)		
ESO^2			0.322	0.417		
			(0.053)	(0.043)		
ISO					-0.725	-0.121
					(0.396)	(0.399)
ISO^2					0.440	0.238
					(0.787)	(0.383)
LEV	-0.105	-0.077	-0.108	-0.078	-0.118	-0.078
	(0.376)	(0.016)	(0.360)	(0.000)	(0.319)	(0.000)
INV	1.249	0.009	1.264	0.007	1.285	0.006
	(0.000)	(0.903)	(0.000)	(0.887)	(0.000)	(0.816)
USUBSP	-0.152	0.001	-0.155	-0.002	-0.146	0.001
	(0.249)	(0.893)	(0.240)	(0.817)	(0.272)	(0.860)
BIND	0.113	0.045	0.115	0.045	0.098	0.045
	(0.571)	(0.344)	(0.567)	(0.183)	(0.624)	(0.179)
AGE	-0.229	-0.005	-0.226	-0.006	-0.221	-0.007
	(0.008)	(0.691)	(0.011)	(0.669)	(0.012)	(0.619)
ASST	-0.592	0.103	-0.586	0.102	-0.565	0.098
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	7.617	-0.842	7.507	-0.826	7.269	-0.788
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adj. R^2	0.089	0.072	0.085	0.075	0.087	0.069

The above table reports the regression results regarding ownership by different groups of managers and performance using random effect models. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix A (cont)

Table A.9: Relationship between ownership by non-executive directors and performance

Panel A: OLS regression		
	Q	ROA
NESO	-1.488	-0.088
	(0.154)	(0.276)
$NESO^2$	2.783	0.169
	(0.118)	(0.247)
LEV	-0.035	-0.093
	(0.841)	(0.000)
INV	1.936	0.024
	(0.000)	(0.772)
USUBSP	-0.218	0.044
	(0.303)	(0.251)
BIND	0.198	0.079
	(0.532)	(0.003)
AGE	-0.110	-0.001
	(0.186)	(0.904)
ASST	-0.339	0.085
	(0.000)	(0.000)
Intercept	5.317	-0.703
	(0.000)	(0.000)
Adj. R^2	0.163	0.155
Panel B: IV regression		
NESO	-1.991	-0.035
	(0.255)	(0.895)
$NESO^2$	3.445	0.078
	(0.215)	(0.843)
LEV	-0.047	-0.096
	(0.781)	(0.000)
INV	1.816	0.011
	(0.000)	(0.893)
USUBSP	-0.157	0.075
	(0.567)	(0.197)
BIND	0.278	0.209
	(0.603)	(0.016)
AGE	-0.096	-0.004
	(0.237)	(0.875)
ASST	-0.305	0.080
	(0.000)	(0.000)
Intercept	4.897	-0.674
	(0.000)	(0.000)
Adj. R^2	0.151	0.144

(cont)

Table A.9 (cont)

Panel C: Simultaneous equations system (3 SLS)

	Q	NESO	INV	ROA	NESO	INV
Q		0.003	0.021			
		(0.743)	(0.000)			
ROA					0.076	0.135
					(0.574)	(0.081)
NESO	-1.637		0.229	-0.019		0.215
	(0.067)		(0.007)	(0.893)		(0.002)
$NESO^2$	2.875		-0.448	0.023		-0.421
	(0.069)		(0.002)	(0.867)		(0.001)
LEV	-0.031	-0.003		-0.095	-0.003	
	(0.802)	(0.837)		(0.000)	(0.797)	
INV	3.510	-0.259		0.106	-0.216	
	(0.000)	(0.219)		(0.443)	(0.283)	
USUBSP	-0.142			0.074		
	(0.443)			(0.114)		
BIND	0.356			0.214		
	(0.345)			(0.005)		
AGE	-0.084			-0.002		
	(0.057)			(0.815)		
ASST	-0.272			0.078		
	(0.000)			(0.000)		
VOL		-0.265	0.073		-0.292	0.156
		(0.001)	(0.118)		(0.000)	(0.001)
LIQ		-0.009	0.046		-0.078	0.178
		(0.731)	(0.003)		(0.536)	(0.013)
MVEQ		$-0.709X10^{-5}$			$-0.667X10^{-5}$	
		(0.125)			(0.147)	
Intercept	4.572	0.029	0.087	-0.647	0.029	0.115
	(0.000)	(0.328)	(0.000)	(0.000)	(0.303)	(0.000)
Adj. R^2	0.139	0.039	0.109	0.143	0.044	0.129

The above table reports the regression results regarding ownership by non-executive directors and performance. Different notations used in the table are defined as follows: NESO = Percentage of ordinary shares owned by the non-executive (independent and grey) directors of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix A (cont)

Table A.10: Relationships between ownership (lagged) by different groups of managers and performance

	Q	ROA	Q	ROA	Q	ROA
$MSO_{(t-1)}$	-1.626	-0.103				
	(0.000)	(0.031)				
$MSO^2_{(t-1)}$	2.926	0.223				
	(0.000)	(0.071)				
$ESO_{(t-1)}$			-1.036	-0.215		
			(0.087)	(0.039)		
$ESO^2_{(t-1)}$			2.599	0.558		
			(0.046)	(0.009)		
$ISO_{(t-1)}$					0.068	-0.194
					(0.932)	(0.138)
$ISO^2_{(t-1)}$					-0.251	0.386
					(0.816)	(0.239)
LEV	-0.073	-0.096	-0.076	-0.095	-0.067	-0.096
	(0.519)	(0.000)	(0.507)	(0.000)	(0.559)	(0.000)
INV	1.796	0.011	1.746	0.008	1.721	0.004
	(0.000)	(0.857)	(0.000)	(0.893)	(0.000)	(0.954)
USUBSP	-0.232	0.041	-0.248	0.038	-0.227	0.040
	(0.173)	(0.151)	(0.259)	(0.172)	(0.389)	(0.165)
BIND	0.148	0.084	0.125	0.088	0.099	0.095
	(0.485)	(0.010)	(0.557)	(0.008)	(0.644)	(0.004)
AGE	-0.114	-0.001	-0.114	-0.002	-0.105	-0.001
	(0.011)	(0.774)	(0.011)	(0.788)	(0.017)	(0.893)
ASST	-0.309	0.079	-0.291	0.079	-0.286	0.079
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	5.053	-0.667	4.871	-0.659	4.781	-0.663
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adj. R^2	0.161	0.159	0.154	0.162	0.151	0.157

The above table reports the regression results regarding ownership (lagged) by different groups of managers and performance. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix A (cont)

Table A.11: Linear Relationship between ISO and performance

Panel A: OLS regression		
	Q	ROA
ISO	-0.218	-0.019
	(0.682)	(0.662)
LEV	-0.075	-0.096
	(0.759)	(0.002)
INV	1.639	0.136
	(0.008)	(0.725)
USUBSP	-0.078	0.046
	(0.725)	(0.186)
BIND	0.263	0.074
	(0.403)	(0.139)
AGE	-0.089	0.001
	(0.245)	(0.935)
ASST	-0.342	0.083
	(0.000)	(0.000)
Intercept	5.109	-0.695
	(0.000)	(0.009)
Adj. R^2	0.179	0.154
Panel B: IV regression		
ISO	-0.057	-0.034
	(0.825)	(0.535)
LEV	-0.067	-0.095
	(0.787)	(0.001)
INV	2.603	0.154
	(0.025)	(0.494)
USUBSP	0.065	0.075
	(0.831)	(0.170)
BIND	0.518	0.219
	(0.327)	(0.195)
AGE	-0.067	0.001
	(0.367)	(0.876)
ASST	-0.283	0.077
	(0.002)	(0.001)
Intercept	4.246	-0.633
	(0.000)	(0.006)
Adj. R^2	0.140	0.133

(cont)

Table A.11 (cont)

Panel C: Simultaneous equations system

	Q	ISO	INV	ROA	ISO	INV
Q		0.102	0.017			
		(0.417)	(0.000)			
ROA					0.069	-0.161
					(0.568)	(0.433)
ISO	0.058		0.004	0.039		0.003
	(0.862)		(0.867)	(0.333)		(0.811)
LEV	-0.066	-0.008		-0.095	-0.011	
	(0.580)	(0.538)		(0.000)	(0.437)	
INV	2.176	-0.162		0.135	-0.171	
	(0.001)	(0.094)		(0.333)	(0.121)	
USUBSP	0.068			0.075		
	(0.718)			(0.218)		
BIND	0.503			0.217		
	(0.185)			(0.000)		
AGE	-0.065			-0.001		
	(0.141)			(0.836)		
ASST	-0.284			0.078		
	(0.000)			(0.000)		
VOL		-0.106	0.051		-0.073	0.109
		(0.142)	(0.276)		(0.253)	(0.012)
LIQ		-0.026	0.039		0.039	0.192
		(0.270)	(0.014)		(0.728)	(0.006)
MVEQ		$-0.624X10^{-5}$			$-0.552X10^{-5}$	
		(0.129)			(0.176)	
Intercept	4.489	0.024	0.090	-0.649	0.036	0.110
	(0.000)	(0.386)	(0.000)	(0.000)	(0.159)	(0.000)
Adj. R^2	0.141	0.013	0.111	0.134	0.037	0.132

The above table reports the regression results regarding ISO and performance. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; Q = Tobin's Q, calculated as the sum of book value of debt, preference shares and market value of equity to book value of assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

APPENDIX B

Table B.1: Relationship between MSO and discretionary accruals (Warfield et al. model)

	DACC	$DACC_{+ve}$	$DACC_{-ve}$
MSO	0.094	0.142	0.026
	(0.001)	(0.006)	(0.293)
MSO^2	-0.104	-0.167	-0.031
	(0.019)	(0.012)	(0.402)
USUBSP	-0.004	-0.004	0.009
	(0.393)	(0.432)	(0.199)
LEV	0.003	0.006	0.004
	(0.377)	(0.261)	(0.343)
BIND	-0.011	-0.019	-0.006
	(0.041)	(0.043)	(0.334)
AUD	-0.005	-0.008	-0.005
	(0.135)	(0.223)	(0.243)
MB	0.001	0.001	0.001
	(0.290)	(0.029)	(0.328)
LTACC	-0.025	-0.065	-0.001
	(0.125)	(0.003)	(0.892)
LOSS	0.024	0.047	0.007
	(0.028)	(0.000)	(0.533)
ASST	-0.009	-0.011	-0.004
	(0.014)	(0.119)	(0.104)
Intercept	0.119	0.128	0.089
	(0.000)	(0.068)	(0.003)
Adj. R^2	0.062	0.103	0.047

The above table reports the regression results relating to MSO and discretionary accruals. Different notations used in the table are defined as follows: DACC = Absolute value of discretionary accruals estimated according to Warfiled et al. (1995) model; $DACC_{+ve}$ = Absolute value of income increasing discretionary accruals; $DACC_{-ve}$ = Absolute value of income decreasing discretionary accruals; MSO = Percentage of ordinary shares owned by the directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable ; ASST = Natural log of book value of assets. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values

Appendix B (cont)

Table B.2: Relationship between ESO and discretionary accruals (Warfield et al. model)

	DACC	$DACC_{+ve}$	$DACC_{-ve}$
ESO	0.047	0.041	0.063
	(0.051)	(0.071)	(0.143)
ESO^2	-0.005	-0.002	-0.033
	(0.029)	(0.082)	(0.719)
USUBSP	-0.003	-0.007	-0.009
	(0.507)	(0.252)	(0.231)
LEV	0.005	0.007	0.002
	(0.283)	(0.226)	(0.891)
BIND	-0.006	-0.010	-0.008
	(0.029)	(0.263)	(0.252)
AUD	-0.004	-0.007	-0.006
	(0.134)	(0.302)	(0.192)
MB	0.001	0.001	0.001
	(0.434)	(0.053)	(0.225)
LTACC	-0.023	-0.059	-0.001
	(0.210)	(0.003)	(0.892)
LOSS	0.026	0.049	0.008
	(0.028)	(0.000)	(0.468)
ASST	-0.009	-0.014	-0.003
	(0.027)	(0.032)	(0.290)
Intercept	0.128	0.150	0.075
	(0.000)	(0.000)	(0.011)
Adj. R^2	0.057	0.091	0.033

The above table reports the regression results relating to ESO and discretionary accruals. Different notations used in the table are defined as follows: DACC = Absolute value of discretionary accruals estimated according to Warfiled et al. (1995) model; $DACC_{+ve}$ = Absolute value of income increasing discretionary accruals; $DACC_{-ve}$ = Absolute value of income decreasing discretionary accruals; ESO = Percentage of ordinary shares owned by the executive directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable ; ASST = Natural log of book value of assets. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values

Appendix B (cont)

Table B.3: Relationship between ISO and discretionary accruals (Warfield et al. model)

	DACC	$DACC_{+ve}$	$DACC_{-ve}$
ISO	0.022	0.035	-0.047
	(0.689)	(0.606)	(0.106)
ISO^2	-0.038	-0.032	-0.006
	(0.711)	(0.818)	(0.875)
USUBSP	-0.003	-0.007	-0.009
	(0.449)	(0.322)	(0.242)
LEV	0.004	0.005	0.005
	(0.298)	(0.296)	(0.827)
BIND	-0.004	-0.011	-0.002
	(0.556)	(0.270)	(0.719)
AUD	-0.003	-0.007	-0.005
	(0.210)	(0.263)	(0.180)
MB	0.001	0.001	0.001
	(0.233)	(0.018)	(0.314)
LTACC	-0.019	-0.059	0.001
	(0.295)	(0.001)	(0.842)
LOSS	0.024	0.047	0.011
	(0.025)	(0.000)	(0.371)
ASST	-0.012	-0.016	-0.004
	(0.004)	(0.029)	(0.034)
Intercept	0.152	0.180	0.092
	(0.000)	(0.007)	(0.000)
Adj. R^2	0.047	0.082	0.037

The above table reports the regression results relating to ISO and discretionary accruals. Different notations used in the table are defined as follows: DACC = Absolute value of discretionary accruals estimated according to Warfiled et al. (1995) model; $DACC_{+ve}$ = Absolute value of income increasing discretionary accruals; $DACC_{-ve}$ = Absolute value of income decreasing discretionary accruals; ISO = Percentage of ordinary shares owned by the independent directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable ; ASST = Natural log of book value of assets. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values

Appendix B (cont)

Table B.4: Relationship between ownership by different groups of managers and discretionary accruals (Random effect)

	(1)	(2)	(3)
MSO	0.087		
	(0.004)		
MSO^2	-0.102		
	(0.003)		
ESO		0.045	
		(0.064)	
ESO^2		-0.019	
		(0.082)	
ISO			0.013
			(0.847)
ISO^2			-0.015
			(0.914)
USUBSP	-0.009	-0.009	-0.010
	(0.251)	(0.245)	(0.275)
LEV	0.006	0.002	0.007
	(0.272)	(0.087)	(0.029)
BIND	-0.013	-0.010	-0.008
	(0.129)	(0.163)	(0.279)
AUD	-0.001	-0.001	-0.001
	(0.861)	(0.730)	(0.845)
MB	0.001	0.001	0.001
	(0.334)	(0.295)	(0.825)
LTACC	-0.015	-0.023	-0.011
	(0.482)	(0.172)	(0.631)
LOSS	0.014	0.017	0.014
	(0.096)	(0.042)	(0.124)
ASST	-0.013	-0.012	-0.016
	(0.009)	(0.007)	(0.001)
Intercept	0.144	0.147	0.181
	(0.005)	(0.000)	(0.000)
Adj. R^2	0.052	0.049	0.044

The above table reports the regression results relating to ownership by different groups of managers and discretionary accruals using random effect models. Discretionary accrual is measured by absolute value of discretionary accruals estimated according to Chan et al. (2006) model; Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable; ASST = Natural log of book value of assets; The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix B (cont)

Table B.5: Relationship between ownership by non-executive directors and discretionary accruals

	DACC	$DACC_{+ve}$	$DACC_{-ve}$
NESO	0.048	0.047	0.035
	(0.107)	(0.312)	(0.327)
$NESO^2$	-0.071	-0.049	-0.080
	(0.125)	(0.513)	(0.170)
USUBSP	-0.010	-0.006	-0.015
	(0.238)	(0.506)	(0.185)
LEV	0.002	0.003	0.008
	(0.736)	(0.472)	(0.586)
BIND	-0.011	-0.010	-0.013
	(0.185)	(0.167)	(0.432)
AUD	-0.010	-0.003	-0.001
	(0.920)	(0.072)	(0.173)
MB	0.001	0.001	0.002
	(0.755)	(0.015)	(0.001)
LTACC	-0.021	-0.071	0.013
	(0.302)	(0.000)	(0.625)
LOSS	0.013	0.042	-0.016
	(0.048)	(0.000)	(0.198)
ASST	-0.013	-0.011	-0.016
	(0.002)	(0.047)	(0.000)
Intercept	0.177	0.144	0.215
	(0.000)	(0.004)	(0.000)
Adj. R^2	0.057	0.082	0.069

The above table reports the regression results relating to non-executive director (independent and grey) share ownership and discretionary accruals. Different notations used in the table are defined as follows: DACC = Absolute value of discretionary accruals estimated according to Chan et al. (2006) model; $DACC_{+ve}$ = Absolute value of income increasing discretionary accruals; $DACC_{-ve}$ = Absolute value of income decreasing discretionary accruals; NESO = Percentage of ordinary shares owned by the non-executive (independent and grey) directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable; ASST = Natural log of book value of assets. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix B (cont)

Table B.6: Relationship between ownership by different groups of managers and discretionary accruals (Resource dummy)

	(1)	(2)	(3)
MSO	0.084		
	(0.001)		
MSO^2	-0.099		
	(0.006)		
ESO		0.044	
		(0.025)	
ESO^2		-0.018	
		(0.029)	
ISO			0.034
			(0.559)
ISO^2			-0.069
			(0.548)
USUBSP	-0.009	-0.009	-0.009
	(0.258)	(0.266)	(0.282)
LEV	0.002	0.003	0.002
	(0.737)	(0.583)	(0.615)
BIND	-0.012	-0.008	-0.007
	(0.151)	(0.039)	(0.433)
AUD	-0.001	-0.001	-0.001
	(0.405)	(0.175)	(0.819)
MB	0.001	0.001	0.001
	(0.696)	(0.867)	(0.578)
LTACC	-0.028	-0.026	-0.023
	(0.075)	(0.014)	(0.019)
LOSS	0.021	0.022	0.021
	(0.008)	(0.007)	(0.007)
ASST	-0.012	-0.019	-0.014
	(0.003)	(0.009)	(0.002)
RS	0.004	0.003	0.004
	(0.036)	(0.043)	(0.049)
Intercept	0.133	0.145	0.163
	(0.000)	(0.000)	(0.000)
Adj. R^2	0.067	0.063	0.057

The above table reports the regression results relating to ownership by different groups of managers and discretionary accruals using a resource dummy variable in the original model. Discretionary accruals is measured by absolute value of discretionary accruals estimated according to Chan et al. (2006) model; Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = dummy variable 1 if the firm is audited by big 4 auditors; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable; ASST = Natural log of book value of assets; RS = Resource dummy variable 1 if the firm is a resource firm; The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix B (cont)

Table B.7: Relationship between ownership by different groups of managers and discretionary accruals (IV regression)

	(1)	(2)	(3)
MSO	0.131		
	(0.017)		
MSO^2	-0.167		
	(0.041)		
ESO		0.104	
		(0.038)	
ESO^2		-0.118	
		(0.024)	
ISO			0.091
			(0.329)
ISO^2			-0.153
			(0.397)
USUBSP	-0.007	-0.007	-0.007
	(0.484)	(0.479)	(0.534)
LEV	0.003	0.002	0.001
	(0.836)	(0.808)	(0.852)
BIND	-0.009	-0.003	-0.001
	(0.567)	(0.315)	(0.849)
AUD	-0.003	-0.002	-0.003
	(0.465)	(0.579)	(0.443)
MB	0.001	0.001	0.001
	(0.050)	(0.357)	(0.814)
LTACC	-0.029	-0.028	-0.027
	(0.078)	(0.129)	(0.092)
LOSS	0.019	0.021	0.021
	(0.006)	(0.004)	(0.003)
ASST	-0.009	-0.010	-0.013
	(0.003)	(0.018)	(0.003)
Intercept	0.141	0.150	0.178
	(0.000)	(0.000)	(0.000)
Adj. R^2	0.068	0.062	0.058

The above table reports the IV regression results relating to ownership by different groups of managers and discretionary accruals. Discretionary accrual is measured by absolute value of discretionary accruals estimated according to Chan et al. (2006) model; Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ; ISO = Percentage of ordinary shares owned by the independent directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = ; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable; ASST = Natural log of book value of assets; The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix B (cont)

Table B.8: Relationship between ISO and discretionary accruals (Linear specification)

ISO	-0.002
	(0.752)
USUBSP	-0.008
	(0.272)
LEV	0.002
	(0.364)
BIND	-0.008
	(0.253)
AUD	-0.001
	(0.196)
MB	0.001
	(0.809)
LTACC	-0.019
	(0.326)
LOSS	0.014
	(0.018)
ASST	-0.014
	(0.001)
Intercept	0.182
	(0.000)
Adj. R^2	0.055

The above table reports the regression results relating to linear specification of ISO and discretionary accruals. Discretionary accrual is measured by absolute value of discretionary accruals estimated according to Chan et al. (2006) model; Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AUD = ; MB = Market to book ratio; LTACC = Lagged total accruals; LOSS = Loss dummy variable; ASST = Natural log of book value of assets; The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix B (cont)

Table B.9: Relationship between MSO and performance (earnings adjusted for discretionary accruals using Warfield et al. model and cash flow)

Panel A: OLS regression		
	AROA	Cash flow
MSO	-0.158	-0.089
	(0.005)	(0.000)
MSO^2	0.107	0.054
	(0.025)	(0.024)
LEV	-0.061	-0.056
	(0.000)	(0.005)
INV	0.061	0.269
	(0.216)	(0.000)
USUBSP	0.016	0.021
	(0.304)	(0.127)
BIND	0.016	0.033
	(0.517)	(0.071)
AGE	-0.002	0.003
	(0.552)	(0.118)
ASST	0.014	0.024
	(0.015)	(0.000)
Intercept	-0.035	-0.122
	(0.532)	(0.028)
Adj. R^2	0.049	0.109
Panel B: IV regression		
MSO	-0.205	-0.192
	(0.054)	(0.000)
MSO^2	0.306	0.208
	(0.045)	(0.000)
LEV	-0.059	-0.056
	(0.015)	(0.013)
INV	0.170	0.483
	(0.137)	(0.000)
USUBSP	0.015	0.018
	(0.267)	(0.122)
BIND	0.046	0.026
	(0.323)	(0.574)
AGE	0.002	0.003
	(0.293)	(0.204)
ASST	0.011	0.019
	(0.159)	(0.010)
Intercept	-0.003	-0.105
	(0.968)	(0.098)
Adj. R^2	0.039	0.069

(cont)

Table B.9 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	MSO	INV	Cash flow	MSO	INV
AROA		2.216	0.309			
		(0.020)	(0.078)			
Cash flow					2.408	0.667
					(0.073)	(0.000)
MSO	-0.151		0.129	-0.189		0.084
	(0.033)		(0.072)	(0.001)		(0.003)
MSO^2	0.097		-0.235	0.199		-0.081
	(0.019)		(0.010)	(0.043)		(0.107)
LEV	-0.059	-0.087		-0.056	-0.067	
	(0.000)	(0.011)		(0.000)	(0.017)	
INV	0.167	-0.406		0.497	0.625	
	(0.078)	(0.183)		(0.000)	(0.309)	
USUBSP	0.022			0.010		
	(0.397)			(0.549)		
BIND	0.056			0.028		
	(0.097)			(0.047)		
AGE	-0.002			0.003		
	(0.427)			(0.138)		
ASST	0.006			0.019		
	(0.296)			(0.000)		
VOL		0.094	0.235		0.489	0.024
		(0.178)	(0.041)		(0.143)	(0.471)
LIQ		1.435	0.081		2.211	0.075
		(0.048)	(0.721)		(0.262)	(0.000)
MVEQ		$-0.170X10^{-5}$			$-0.596X10^{-5}$	
		(0.061)			(0.016)	
Intercept	0.052	0.172	0.104	-0.095	0.142	-0.003
	(0.438)	(0.008)	(0.000)	(0.087)	(0.004)	(0.778)
Adj. R^2	0.038	0.029	0.079	0.062	0.034	0.143

The above table reports the regression results relating to managerial share ownership and adjusted earnings as well as cash earnings. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets[65]; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

[65] LIQ = Cash and cash equivalents when performance is measured by cash flow from operations.

Appendix B (cont)

Table B.10: Relationship between ESO and performance (earnings adjusted for discretionary accruals using Warfield et al. model and cash flow)

Panel A: OLS regression		
	AROA	Cash flow
ESO	-0.210	-0.149
	(0.031	(0.000)
ESO^2	0.373	0.324
	(0.057)	(0.000)
LEV	-0.062	-0.056
	(0.003)	(0.007)
INV	0.078	0.282
	(0.308)	(0.000)
USUBSP	0.013	0.018
	(0.291)	(0.315)
BIND	0.013	0.029
	(0.575)	(0.191)
AGE	-0.002	0.003
	(0.178)	(0.157)
ASST	0.018	0.027
	(0.000)	(0.000)
Intercept	-0.074	-0.152
	(0.203)	(0.009)
Adj. R^2	0.044	0.103
Panel B: IV regression		
ESO	-0.173	-0.183
	(0.036)	(0.000)
ESO^2	0.298	0.348
	(0.034)	(0.001)
LEV	-0.060	-0.057
	(0.013)	(0.016)
INV	0.164	0.506
	(0.137)	(0.000)
USUBSP	0.015	0.015
	(0.383)	(0.158)
BIND	0.027	0.022
	(0.322)	(0.627)
AGE	-0.003	0.003
	(0.186)	(0.178)
ASST	0.012	0.024
	(0.048)	(0.001)
Intercept	-0.015	-0.153
	(0.771)	(0.023)
Adj. R^2	0.039	0.064

(cont)

Table B.10 (cont)

Panel C : Simultaneous equations system (3 SLS)

	AROA	ESO	INV	Cash flow	ESO	INV
AROA		1.601	0.253			
		(0.023)	(0.036)			
Cash flow					2.031	0.647
					(0.063)	(0.000)
ESO	-0.173		0.072	-0.183		0.067
	(0.076)		(0.246)	(0.021)		(0.076)
ESO^2	0.295		-0.142	0.348		-0.062
	(0.039)		(0.272)	(0.021)		(0.042)
LEV	-0.061	-0.072		-0.057	-0.053	
	(0.000)	(0.005)		(0.000)	(0.019)	
INV	0.206	-0.068		0.522	2.901	
	(0.093)	(0.765)		(0.000)	(0.187)	
USUBSP	0.018			0.010		
	(0.392)			(0.731)		
BIND	0.030			0.021		
	(0.249)			(0.573)		
AGE	-0.003			0.003		
	(0.357)			(0.202)		
ASST	0.011			0.024		
	(0.053)			(0.000)		
VOL		-0.561	0.174		-0.139	0.033
		(0.229)	(0.093)		(0.326)	(0.027)
LIQ		1.175	0.069		2.219	0.082
		(0.023)	(0.085)		(0.176)	(0.000)
MVEQ		$-0.132X10^{-5}$			$-0.567X10^{-5}$	
		(0.049)			(0.054)	
Intercept	-0.069	0.111	0.108	-0.142	0.086	0.001
	(0.192)	(0.021)	(0.000)	(0.014)	(0.032)	(0.873)
Adj. R^2	0.037	0.030	0.077	0.052	0.031	0.118

The above table reports the regression results relating to ESO and adjusted earnings as well as cash flow. Different notations used in the table are defined as follows: ESO = Percentage of ordinary shares owned by the executive directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix B (cont)

Table B.11: Relationship between ISO and performance (earnings adjusted for discretionary accruals using Warfield et al. model and cash flow)

Panel A: OLS regression		
	AROA	Cash flow
ISO	-0.026	0.187
	(0.792)	(0.109)
ISO^2	-0.264	-0.614
	(0.226)	(0.167)
LEV	-0.056	-0.049
	(0.007)	(0.001)
INV	0.059	0.258
	(0.477)	(0.000)
USUBSP	0.015	0.021
	(0.217)	(0.193)
BIND	0.013	0.035
	(0.596)	(0.067)
AGE	-0.002	0.003
	(0.456)	(0.212)
ASST	0.018	0.025
	(0.000)	(0.000)
Intercept	-0.083	-0.144
	(0.104)	(0.012)
Adj. R^2	0.040	0.087
Panel B: IV regression		
ISO	-0.246	0.105
	(0.261)	(0.535)
ISO^2	0.059	-0.451
	(0.871)	(0.120)
LEV	-0.053	-0.049
	(0.022)	(0.022)
INV	0.127	0.449
	(0.265)	(0.000)
USUBSP	0.012	0.017
	(0.378)	(0.195)
BIND	0.033	0.031
	(0.451)	(0.525)
AGE	-0.002	-0.004
	(0.367)	(0.203)
ASST	0.009	0.023
	(0.032)	(0.001)
Intercept	0.003	-0.145
	(0.813)	(0.026)
Adj. R^2	0.032	0.062

(cont)

Table B.11 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	ISO	INV	Cash flow	ISO	INV
AROA		0.111	0.304			
		(0.649)	(0.032)			
Cash flow					0.436	0.656
					(0.426)	(0.000)
ISO	-0.237		0.373	0.104		-0.142
	(0.224)		(0.031)	(0.504)		(0.167)
ISO^2	0.048		-0.714	-0.449		0.286
	(0.868)		(0.020)	(0.154)		(0.194)
LEV	-0.053	-0.007		-0.051	-0.005	
	(0.000)	(0.411)		(0.000)	(0.512)	
INV	0.168	-0.076		0.467	0.332	
	(0.074)	(0.338)		(0.000)	(0.687)	
USUBSP	0.019			0.010		
	(0.352)			(0.579)		
BIND	0.039			0.029		
	(0.382)			(0.041)		
AGE	-0.002			-0.003		
	(0.482)			(0.119)		
ASST	0.009			0.023		
	(0.055)			(0.000)		
VOL		-0.673	0.305		-0.685	0.021
		(0.284)	(0.049)		(0.000)	(0.093)
LIQ		0.027	0.097		0.291	0.246
		(0.033)	(0.069)		(0.636)	(0.000)
MVEQ		$-0.572X10^{-5}$			$-0.250X10^{-5}$	
		(0.086)			(0.379)	
Intercept	0.016	-0.007	0.108	-0.135	-0.002	0.003
	(0.793)	(0.663)	(0.000)	(0.009)	(0.876)	(0.740)
Adj. R^2	0.031	0.029	0.084	0.029	0.028	0.085

The above table reports the regression results relating to ISO and adjusted earnings as well as cash flow. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix B (cont)

Table B.12: Relationship between ownership by non-executive directors and adjusted earnings

Panel A: OLS regression	
	AROA
NESO	-0.286
	(0.127)
NESO ^{2}	0.207
	(0.213)
LEV	-0.062
	(0.000)
INV	0.078
	(0.812)
USUBSP	0.009
	(0.589)
BIND	0.015
	(0.598)
AGE	-0.002
	(0.574)
ASST	0.013
	(0.023)
Intercept	-0.015
	(0.789)
Adj. R^2	0.054
Panel B : IV regression	
NESO	-0.286
	(0.173)
NESO ^{2}	0.232
	(0.215)
LEV	-0.059
	(0.000)
INV	0.014
	(0.919)
USUBSP	0.007
	(0.689)
BIND	0.041
	(0.371)
AGE	-0.002
	(0.426)
ASST	0.006
	(0.073)
Intercept	0.051
	(0.452)
Adj. R^2	0.047

(cont)

Table B.12 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	NESO	INV
AROA		0.564	0.021
		(0.126)	(0.828)
NESO	-0.281		0.168
	(0.178)		(0.019)
$NESO^2$	0.211		-0.349
	(0.256)		(0.005)
LEV	-0.058	-0.019	
	(0.001)	(0.247)	
INV	0.056	-0.365	
	(0.675)	(0.199)	
USUBSP	0.023		
	(0.308)		
BIND	0.041		
	(0.294)		
AGE	-0.002		
	(0.428)		
ASST	0.007		
	(0.065)		
VOL		-0.561	0.164
		(0.000)	(0.005)
LIQ		0.161	0.133
		(0.209)	(0.047)
MVEQ		$-0.369X10^{-5}$	
		(0.439)	
Intercept	0.054	0.069	0.112
	(0.422)	(0.032)	(0.000)
Adj. R^2	0.048	0.025	0.129

The above table reports the regression results relating to ownership by the non-executive (independent and grey) directors and adjusted earnings. Different notations used in the table are defined as follows: NESO = Percentage of ordinary shares owned by the non-executive (independent and grey) directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA - DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix B (cont)

Table B.13: Relationships between ownership by different groups of managers and adjusted earnings (Random effect)

	(1)	(2)	(3)
MSO	-0.323		
	(0.014)		
MSO^2	0.276		
	(0.075)		
ESO		-0.134	
		(0.046)	
ESO^2		0.211	
		(0.028)	
ISO			-0.213
			(0.132)
ISO^2			0.144
			(0.654)
LEV	-0.051	-0.052	-0.049
	(0.000)	(0.002)	(0.005)
INV	0.018	0.019	0.015
	(0.892)	(0.819)	(0.854)
USUBSP	0.009	0.007	0.007
	(0.638)	(0.729)	(0.674)
BIND	0.043	0.046	0.051
	(0.307)	(0.266)	(0.226)
AGE	-0.002	-0.002	-0.002
	(0.457)	(0.462)	(0.524)
ASST	0.010	0.022	0.022
	(0.235)	(0.000)	(0.000)
Intercept	0.003	-0.132	-0.134
	(0.973)	(0.018)	(0.004)
Adj. R^2	0.057	0.048	0.046

The above table reports the regression results relating to ownership by different groups of managers and adjusted earnings using random effect models. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix B (cont)

Table B.14: Relationship between MSO and adjusted earnings (Resource dummy)

Panel A: OLS regression	
	AROA
MSO	-0.308
	(0.000)
MSO^2	0.307
	(0.007)
LEV	-0.057
	(0.001)
INV	0.003
	(0.867)
USUBSP	0.015
	(0.372)
BIND	0.010
	(0.743)
AGE	-0.003
	(0.165)
ASST	0.006
	(0.263)
RS	-0.004
	(0.063)
Intercept	0.032
	(0.596)
Adj. R^2	0.058
Panel B: IV regression	
MSO	-0.284
	(0.004)
MSO^2	0.304
	(0.036)
LEV	-0.055
	(0.008)
INV	0.062
	(0.535)
USUBSP	0.015
	(0.468)
BIND	0.044
	(0.376)
AGE	-0.003
	(0.023)
ASST	0.003
	(0.633)
RS	-0.006
	(0.035)
Intercept	0.066
	(0.210)
Adj. R^2	0.049

(cont)

Table B.14 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	MSO	INV
AROA		2.367	0.106
		(0.035)	(0.076)
MSO	-0.329		-0.045
	(0.081)		(0.712)
MSO^2	0.372		0.194
	(0.045)		(0.402)
LEV	-0.051	-0.116	
	(0.003)	(0.019)	
INV	0.059	-0.465	
	(0.027)	(0.365)	
USUBSP	0.003		
	(0.347)		
BIND	0.052		
	(0.032)		
AGE	-0.018		
	(0.049)		
ASST	0.015		
	(0.172)		
VOL		0.977	0.218
		(0.088)	(0.052)
LIQ		1.189	0.021
		(0.078)	(0.017)
MVEQ		$-0.257X10^{-5}$	
		(0.083)	
RS	-0.014	0.059	0.022
	(0.032)	(0.069)	(0.013)
Intercept	0.034	0.206	0.056
	(0.767)	(0.000)	(0.000)
Adj. R^2	0.047	0.041	0.108

The above table reports the regression results relating to MSO and adjusted earnings using a resource dummy variable in the original model. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; RS = Resource dummy variable 1 if the firm is a resource firm; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix B (cont)

Table B.15: Relationship between ESO and adjusted earnings (Resource dummy)

Panel A: OLS regression	
	AROA
ESO	-0.304
	(0.005)
ESO^2	0.511
	(0.007)
LEV	-0.061
	(0.003)
INV	0.029
	(0.718)
USUBSP	0.009
	(0.618)
BIND	0.006
	(0.128)
AGE	-0.004
	(0.013)
ASST	0.014
	(0.008)
RS	-0.003
	(0.064)
Intercept	-0.042
	(0.376)
Adj. R^2	0.043
Panel B: IV regression	
ESO	-0.242
	(0.006)
ESO^2	0.429
	(0.012)
LEV	-0.058
	(0.009)
INV	0.105
	(0.322)
USUBSP	0.009
	(0.671)
BIND	0.038
	(0.421)
AGE	-0.004
	(0.005)
ASST	0.011
	(0.067)
RS	-0.001
	(0.091)
Intercept	-0.015
	(0.744)
Adj. R^2	0.033

(cont)

Table B.15 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	ESO	INV
AROA		1.072	0.096
		(0.074)	(0.057)
ESO	-0.561		-0.071
	(0.060)		(0.778)
ESO^2	1.076		0.508
	(0.016)		(0.176)
LEV	-0.052	-0.056	
	(0.003)	(0.013)	
INV	0.097	0.178	
	(0.061)	(0.446)	
USUBSP	-0.025		
	(0.544)		
BIND	0.042		
	(0.048)		
AGE	-0.019		
	(0.043)		
ASST	0.018		
	(0.116)		
VOL		-0.355	0.219
		(0.217)	(0.082)
LIQ		0.399	0.005
		(0.215)	(0.078)
MVEQ		$-0.304X10^{-5}$	
		(0.079)	
RS	-0.006	0.033	0.023
	(0.027)	(0.029)	(0.009)
Intercept	0.021	0.059	0.059
	(0.864)	(0.000)	(0.000)
Adj. R^2	0.034	0.032	0.112

The above table reports the regression results relating to ESO and adjusted earnings using a resource dummy variable in the original model. Different notations used in the table are defined as follows: ESO = Percentage of ordinary shares owned by the executive directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure to book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values; RS = Resource dummy variable 1 if the firm is a resource firm; The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix B (cont)

Table B.16: Relationship between ISO and adjusted earnings (Resource dummy)

Panel A: OLS regression	
	AROA
ISO	-0.357
	(0.217)
ISO^2	0.306
	(0.175)
LEV	-0.054
	(0.008)
INV	0.014
	(0.870)
USUBSP	0.012
	(0.484)
BIND	0.002
	(0.837)
AGE	-0.003
	(0.089)
ASST	0.015
	(0.005)
RS	-0.006
	(0.058)
Intercept	-0.059
	(0.158)
Adj. R^2	0.041
Panel B: IV regression	
ISO	-0.718
	(0.171)
ISO^2	0.826
	(0.513)
LEV	-0.056
	(0.022)
INV	0.078
	(0.048)
USUBSP	0.009
	(0.658)
BIND	0.004
	(0.383)
AGE	-0.003
	(0.078)
ASST	0.010
	(0.217)
RS	-0.003
	(0.073)
Intercept	0.017
	(0.064)
Adj. R^2	0.038

(cont)

Table B.16 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	ISO	INV
AROA		0.711	0.099
		(0.165)	(0.096)
ISO	-0.889		-0.496
	(0.155)		(0.191)
ISO^2	1.879		0.936
	(0.258)		(0.350)
LEV	-0.049	-0.027	
	(0.006)	(0.114)	
INV	0.089	0.214	
	(0.036)	(0.212)	
USUBSP	-0.012		
	(0.761)		
BIND	0.010		
	(0.016)		
AGE	-0.017		
	(0.079)		
ASST	0.021		
	(0.056)		
VOL		-0.222	0.148
		(0.159)	(0.051)
LIQ		0.382	0.122
		(0.114)	(0.058)
MVEQ		$-0.101X10^{-5}$	
		(0.805)	
RS	-0.004	0.001	0.019
	(0.012)	(0.091)	(0.025)
Intercept	-0.026	0.045	0.068
	(0.821)	(0.034)	(0.000)
Adj. R^2	0.037	0.032	0.085

The above table reports the regression results relating to ISO and adjusted earnings using a resource dummy variable in the original model. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; RS = Resource dummy variable 1 if the firm is a resource firm; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year dummies are not reported.

Appendix B (cont)

Table B.17: Relationships between ownership (lagged) by different groups of managers and adjusted earnings

$MSO_{(t-1)}$	-0.254		
	(0.001)		
$MSO^{2}_{(t-1)}$	0.213		
	(0.019)		
$ESO_{(t-1)}$		-0.159	
		(0.051)	
$ESO^{2}_{(t-1)}$		0.269	
		(0.089)	
$ISO_{(t-1)}$			-0.237
			(0.221)
$ISO^{2}_{(t-1)}$			0.194
			(0.132)
LEV	-0.059	-0.061	-0.059
	(0.000)	(0.000)	(0.000)
INV	0.011	0.019	0.014
	(0.839)	(0.721)	(0.791)
USUBSP	0.006	0.003	0.006
	(0.683)	(0.827)	(0.692)
BIND	0.004	0.002	0.007
	(0.853)	(0.648)	(0.762)
AGE	-0.003	-0.003	-0.002
	(0.303)	(0.255)	(0.413)
ASST	0.005	0.010	0.009
	(0.042)	(0.081)	(0.085)
Intercept	0.062	0.008	0.008
	(0.293)	(0.883)	(0.878)
Adj. R^{2}	0.038	0.027	0.031

The above table reports the regression results relating to ownership (lagged) by different groups of managers and performance. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; MVEQ = Natural log of market value of common equity; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix B (cont)

Table B.18: Relationship between MSO and adjusted earnings (AEBITDA)

Panel A: OLS regression	
	AEBITDA
MSO	-0.376
	(0.000)
MSO^2	0.413
	(0.002)
LEV	-0.047
	(0.007)
INV	0.099
	(0.095)
USUBSP	0.003
	(0.211)
BIND	0.039
	(0.081)
AGE	-0.003
	(0.863)
ASST	0.008
	(0.281)
Intercept	0.113
	(0.099)
Adj. R^2	0.072
Panel B: IV regression	
MSO	-0.436
	(0.000)
MSO^2	0.541
	(0.004)
LEV	-0.045
	(0.009)
INV	0.262
	(0.087)
USUBSP	0.002
	(0.281)
BIND	0.005
	(0.880)
AGE	-0.001
	(0.883)
ASST	0.003
	(0.088)
Intercept	0.165
	(0.043)
Adj. R^2	0.056

(cont)

Table B.18 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AEBITDA	MSO	INV
AEBITDA		1.070	0.032
		(0.000)	(0.008)
MSO	-0.422		0.130
	(0.000)		(0.011)
MSO^2	0.514		-0.236
	(0.001)		(0.006)
LEV	-0.045	-0.053	
	(0.008)	(0.028)	
INV	0.309	-0.269	
	(0.041)	(0.231)	
USUBSP	0.003		
	(0.252)		
BIND	0.002		
	(0.894)		
AGE	-0.004		
	(0.905)		
ASST	0.003		
	(0.075)		
VOL		0.603	0.135
		(0.000)	(0.007)
LIQ		0.734	0.070
		(0.004)	(0.459)
MVEQ		$-0.134X10^{-5}$	
		(0.052)	
Intercept	0.165	0.208	0.099
	(0.045)	(0.001)	(0.000)
Adj. R^2	0.056	0.027	0.098

The above table reports the regression relating to MSO and adjusted earnings measured by AEBITDA. Different notations used in the table are defined as follows: MSO = Percentage of ordinary shares owned by the directors of the board; EBITDA = Earnings before interest, taxes depreciation and amortisation to year-end book value of assets; AEBITDA = EBITDA – DACC; DACC = Discretionary accruals, calculated as the discretionary accruals as per Chan et al. model scaled by the book value of assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; MVEQ = Natural log of market value of common equity; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix B (cont)

Table B.19: Relationship between ESO and adjusted earnings (AEBITDA)

Panel A: OLS regression	
	AEBITDA
ESO	-0.360
	(0.001)
ESO^2	0.663
	(0.002)
LEV	-0.050
	(0.001)
INV	0.118
	(0.261)
USUBSP	0.002
	(0.314)
BIND	0.063
	(0.491)
AGE	-0.001
	(0.491)
ASST	0.014
	(0.014)
Intercept	0.033
	(0.668)
Adj. R^2	0.046
Panel B: IV regression	
ESO	-0.327
	(0.000)
ESO^2	0.585
	(0.001)
LEV	-0.049
	(0.006)
INV	0.280
	(0.124)
USUBSP	0.003
	(0.496)
BIND	0.027
	(0.389)
AGE	0.001
	(0.549)
ASST	0.010
	(0.092)
Intercept	0.076
	(0.388)
Adj. R^2	0.027

(cont)

Table B.19 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AEBITDA	ESO	INV
AEBITDA		0.541	0.050
		(0.004)	(0.592)
ESO	-0.327		0.083
	(0.008)		(0.162)
ESO^2	0.589		-0.166
	(0.016)		(0.174)
LEV	-0.049	-0.048	
	(0.005)	(0.006)	
INV	0.332	0.061	
	(0.028)	(0.707)	
USUBSP	0.003		
	(0.293)		
BIND	0.032		
	(0.357)		
AGE	-0.001		
	(0.739)		
ASST	0.001		
	(0.075)		
VOL		-0.058	0.092
		(0.550)	(0.051)
LIQ		0.454	0.104
		(0.011)	(0.235)
MVEQ		$-0.108X10^{-5}$	
		(0.027)	
Intercept	0.076	0.114	0.106
	(0.366)	(0.002)	(0.000)
Adj. R^2	0.025	0.037	0.114

The above table reports the regression results relating to ESO and adjusted earnings measured by AEBITDA. Different notations used in the table are defined as follows: ESO = Percentage of ordinary shares owned by the executive directors of the board; EBITDA = Earnings before interest, taxes depreciation and amortisation to year-end book value of assets; AEBITDA = EBITDA – DACC; DACC = Discretionary accruals, calculated as the discretionary accruals as per Chan et al. model scaled by the book value of assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure to book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; MVEQ = Natural log of market value of common equity; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix B (cont)

Table B.20: Relationship between ISO and adjusted earnings (AEBITDA)

Panel A: OLS regression	
	AEBITDA
ISO	-0.286
	(0.154)
ISO^2	0.190
	(0.426)
LEV	-0.043
	(0.018)
INV	0.102
	(0.098)
USUBSP	0.015
	(0.430)
BIND	0.009
	(0.745)
AGE	-0.001
	(0.864)
ASST	0.019
	(0.004)
Intercept	0.009
	(0.892)
Adj. R^2	0.039
Panel B: IV regression	
ISO	-0.659
	(0.583)
ISO^2	0.736
	(0.267)
LEV	-0.048
	(0.557)
INV	0.103
	(0.092)
USUBSP	0.054
	(0.919)
BIND	0.132
	(0.861)
AGE	-0.001
	(0.853)
ASST	0.001
	(0.894)
Intercept	0.112
	(0.309)
Adj. R^2	0.031

(cont)

Table B.20 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AEBITDA	ISO	INV
AEBITDA		0.913	0.014
		(0.183)	(0.880)
ISO	-0.324		-0.323
	(0.642)		(0.409)
ISO^2	0.674		0.655
	(0.739)		(0.509)
LEV	-0.032	-0.017	
	(0.108)	(0.367)	
INV	0.252	-0.244	
	(0.806)	(0.401)	
USUBSP	0.014		
	(0.767)		
BIND	0.065		
	(0.228)		
AGE	-0.001		
	(0.894)		
ASST	0.038		
	(0.002)		
VOL		-0.091	0.196
		(0.595)	(0.038)
LIQ		0.667	0.075
		(0.222)	(0.054)
MVEQ		$-0.413X10^{-5}$	
		(0.228)	
Intercept	-0.602	-0.299	0.043
	(0.001)	(0.221)	(0.822)
Adj. R^2	0.033	0.023	0.099

The above table reports the regression results relating to ISO and adjusted earnings measured by AEBITDA. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; EBITDA = Earnings before interest, taxes depreciation and amortisation to year-end book value of assets; AEBITDA = EBITDA – DACC; DACC = Discretionary accruals, calculated as the discretionary accruals as per Chan et al. model scaled by the book value of assets; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure to book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; MVEQ = Natural log of market value of common equity; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

Appendix B (cont)

Table B.21: Linear Relationship between ISO and adjusted earnings

Panel A: OLS regression	
	AROA
ISO	-0.187
	(0.152)
LEV	-0.055
	(0.010)
INV	0.010
	(0.170)
USUBSP	0.009
	(0.616)
BIND	0.007
	(0.731)
AGE	-0.003
	(0.097)
ASST	0.011
	(0.072)
Intercept	-0.011
	(0.872)
Adj. R^2	0.039
Panel B: IV regression	
ISO	-0.211
	(0.253)
LEV	-0.051
	(0.029)
INV	0.031
	(0.822)
USUBSP	0.023
	(0.459)
BIND	0.038
	(0.496)
AGE	-0.003
	(0.052)
ASST	0.005
	(0.356)
Intercept	0.045
	(0.404)
Adj. R^2	0.036

(cont)

Table B.21 (cont)

Panel C: Simultaneous equations system (3 SLS)

	AROA	ISO	INV
AROA		1.058	0.135
		(0.114)	(0.082)
ISO	-0.316		-0.172
	(0.661)		(0.549)
LEV	-0.040	-0.027	
	(0.015)	(0.203)	
INV	0.195	0.267	
	(0.063)	(0.328)	
USUBSP	-0.002		
	(0.512)		
BIND	0.038		
	(0.137)		
AGE	-0.012		
	(0.173)		
ASST	0.031		
	(0.002)		
VOL		-0.429	0.112
		(0.186)	(0.072)
LIQ		0.576	0.163
		(0.014)	(0.649)
MVEQ		$-0.249X10^{-5}$	
		(0.647)	
Intercept	-0.609	-0.440	-0.021
	(0.000)	(0.126)	(0.912)
Adj. R^2	0.033	0.029	0.082

The above table reports the regression results relating to ISO and adjusted earnings using a linear specification of ISO. Different notations used in the table are defined as follows: ISO = Percentage of ordinary shares owned by the independent directors of the board; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; DACC = Discretionary accruals estimated according to Chan et al. (2006) model; AROA = ROA- DACC; LEV = Leverage, calculated as the ratio of book value of debt and book value of total assets; INV = Investment, calculated as the ratio of capital expenditure and book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; AGE = Age of the firm calculated by taking the natural log of number of years since the firm is listed on the ASX; ASST = Natural log of book value of assets; MVEQ = Natural log of market value of common equity; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; LIQ = Liquidity, calculated as the ratio of net operating cash flows and book value of assets; Figures in parentheses are P values. The reported results are heteroskedasticity and serial correlation consistent. Year and industry dummies are not reported.

APPENDIX C

Table C.1: The determinants of likelihood of paying dividends and dividend payouts

	Logit	OLS
ETR	0.292	0.003
	(0.087)	(0.016)
DFD	4.429	0.030
	(0.000)	(0.000)
BIND	2.343	0.007
	(0.001)	(0.047)
DISP	0.374	0.002
	(0.282)	(0.037)
LEV	1.432	-0.005
	(0.208)	(0.039)
ROA	2.971	0.052
	(0.058)	(0.000)
CASH	-1.463	0.223
	(0.419)	(0.000)
GRW	-0.034	-0.001
	(0.612)	(0.007)
VOL	-10.482	-0.051
	(0.031)	(0.029)
USUBSP	2.081	-0.005
	(0.041)	(0.321)
ANST	0.332	0.002
	(0.141)	(0.083)
DRP	1.078	0.001
	(0.007)	(0.047)
RETA	2.626	0.019
	(0.001)	(0.032)
INTERCEPT	-4.193	-0.003
	(0.028)	(0.853)
McFaden R^2 / Adjusted R^2	0.502	0.462

The above table reports logit and OLS regression results regarding the regarding the determinants of likelihood of paying dividends and dividend payouts. Different notations used in the table are defined as follows: DIVTA = Dividends to total assets; ETR = Effective tax rate calculated as the ratio of annual tax expense and net earnings before interest and taxes; DFD = Franked dividends, a dummy 1 variable if the firm declares franked dividends; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by the taking natural log of total number of shareholders of a firm; LEV = Debt, calculated as the ratio of book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation and book value of total assets; GRW = Growth rate calculated as the average of annual growth rate of a firm's total sales of preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; ANST = Analysts calculated as the natural log maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; RETA = Retained equity calculated as retained earnings scaled by total assets; Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix C (cont)

Table C.2: Nonlinear Relationship between ownership by different groups of managers and dividends

	(1)	(2)	(3)
MSO	0.002		
	(0.926)		
MSO^2	0.008		
	(0.794)		
ESO		-0.027	
		(0.207)	
ESO^2		0.085	
		(0.127)	
ISO			0.006
			(0.831)
ISO^2			-0.029
			(0.623)
ETR	0.004	0.005	0.003
	(0.026)	(0.029)	(0.030)
DFD	0.026	0.028	0.024
	(0.000)	(0.000)	(0.000)
BIND	0.009	0.007	0.003
	(0.109)	(0.154)	(0.165)
DISP	0.001	0.001	0.001
	(0.465)	(0.309)	(0.408)
LEV	-0.007	-0.003	-0.009
	(0.465)	(0.621)	(0.589)
ROA	0.058	0.061	0.052
	(0.003)	(0.004)	(0.003)
CASH	0.207	0.210	0.211
	(0.000)	(0.000)	(0.000)
GRW	-0.005	-0.002	-0.001
	(0.010)	(0.015)	(0.009)
VOL	-0.057	-0.066	-0.062
	(0.075)	(0.107)	(0.126)
USUBSP	-0.004	-0.009	-0.007
	(0.060)	(0.035)	(0.185)
ANST	0.002	0.006	0.002
	(0.116)	(0.102)	(0.174)
DRP	0.003	0.001	0.001
	(0.451)	(0.418)	(0.458)
RETA	0.026	0.032	0.024
	(0.011)	(0.009)	(0.011)
INTERCEPT	-0.008	-0.003	-0.006
	(0.668)	(0.802)	(0.683)
Adjusted R^2	0.482	0.485	0.479

The above table reports OLS regression results regarding the relationhips between MSO, ESO as well as ISO and dividends. Different notations used in the table are defined as follows: DIVTA = Dividends to total assets; MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ETR = Effective tax rate calculated as the ratio of annual tax expense and net earnings before interest and taxes; DFD = Franked dividends, a dummy 1 variable if the firm declares franked dividends; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by the taking natural log of total number of shareholders of a firm; LEV = Debt, calculated as the ratio of book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation and book value of total assets; GRW = Growth rate calculated as the average of annual growth rate of a firm's total sales of preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; ANST = Analysts calculated as the natural log maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; RETA = Retained equity calculated as retained earnings scaled by total assets; Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix C(cont)

Table C.3: Relationship between ownership by different groups of managers and dividends with a resource dummy

	(1)	(2)	(3)
MSO	0.005		
	(0.058)		
ESO		0.012	
		(0.011)	
ISO			0.002
			(0.874)
ETR	0.003	0.004	0.002
	(0.008)	(0.008)	(0.000)
DFD	0.020	0.022	0.019
	(0.000)	(0.000)	(0.000)
BIND	0.009	0.005	0.007
	(0.084)	(0.097)	(0.144)
DISP	0.001	0.002	0.001
	(0.018)	(0.056)	(0.036)
LEV	-0.002	-0.001	-0.002
	(0.424)	(0.448)	(0.430)
ROA	0.055	0.049	0.047
	(0.002)	(0.002)	(0.002)
CASH	0.213	0.221	0.202
	(0.000)	(0.000)	(0.000)
GRW	-0.001	-0.002	-0.002
	(0.003)	(0.003)	(0.003)
VOL	-0.067	-0.059	-0.062
	(0.116)	(0.119)	(0.117)
USUBSP	-0.006	-0.004	-0.009
	(0.222)	(0.234)	(0.263)
ANST	0.004	0.002	0.001
	(0.041)	(0.081)	(0.037)
DRP	0.004	0.001	0.002
	(0.094)	(0.228)	(0.180)
RETA	0.031	0.024	0.021
	(0.012)	(0.013)	(0.012)
RS	-0.009	-0.010	-0.014
	(0.000)	(0.000)	(0.000)
INTERCEPT	-0.022	-0.019	-0.020
	(0.000)	(0.000)	(0.000)
Adjusted R^2	0.474	0.475	0.472

The above table reports OLS regression results regarding the relations between MSO, ESO as well as ISO and dividends using a dummy variable for the resource companies. Different notations used in the table are defined as follows: DIVTA = Dividends to total assets; MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ETR = Effective tax rate calculated as the ratio of annual tax expense and net earnings before interest and taxes; DFD = Franked dividends, a dummy 1 variable if the firm declares franked dividends; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by the taking natural log of total number of shareholders of a firm; LEV = Debt, calculated as the ratio of book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation and book value of total assets; GRW = Growth rate calculated as the average of annual growth rate of a firm's total sales of preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; ANST = Analysts calculated as the natural log maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; RETA = Retained equity calculated as retained earnings scaled by total assets; RS = Resource dummy, a dummy variable if the firm is a resource firm. Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix C (cont)

Table C.4: Relationship between ownership by different groups of managers and dividends with free cash flow dummy

	(1)	(2)	(3)
MSO	0.003		
	(0.062)		
ESO		0.018	
		(0.016)	
ISO			0.019
			(0.183)
ETR	0.006	0.004	0.002
	(0.046)	(0.056)	(0.044)
DFD	0.026	0.023	0.019
	(0.000)	(0.000)	(0.000)
BIND	0.006	0.004	0.003
	(0.058)	(0.049)	(0.027)
DISP	0.002	0.002	0.003
	(0.021)	(0.031)	(0.001)
LEV	-0.006	-0.002	-0.003
	(0.488)	(0.524)	(0.587)
ROA	0.183	0.172	0.169
	(0.000)	(0.000)	(0.000)
VOL	-0.226	-0.203	-0.197
	(0.000)	(0.000)	(0.002)
USUSBSP	-0.019	-0.017	-0.013
	(0.015)	(0.010)	(0.028)
ANST	0.009	0.005	0.004
	(0.000)	(0.000)	(0.000)
DRP	0.003	0.001	0.001
	(0.034)	(0.038)	(0.019)
RETA	0.030	0.034	0.029
	(0.002)	(0.002)	(0.003)
FCD	0.006	0.007	0.015
	(0.010)	(0.002)	(0.000)
FCD*MSO	0.005		
	(0.683)		
FCD*ESO		0.013	
		(0.447)	
FCD*ISO			0.011
			(0.603)
INTERCEPT	0.033	0.031	0.029
	(0.025)	(0.029)	(0.043)
Adjusted R^2	0.378	0.381	0.373

The above table reports OLS regression results regarding the relations between MSO, ESO as well as ISO and dividends for high cash flow firms. Different notations used in the table are defined as follows: DIVTA = Dividends to total assets; MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ETR = Effective tax rate calculated as the ratio of annual tax expense and net earnings before interest and taxes; DFD = Franked dividends, a dummy 1 variable if the firm declares franked dividends; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by the taking natural log of total number of shareholders of a firm; LEV = Debt, calculated as the ratio of book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; FCD =The firm-year observations having cash flow higher than the sample median and growth opportunities lower than sample median were considered high free cash flow firms and were coded a dummy variable 1 and vice versa;VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; ANST = Analysts calculated as the natural log maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; RETA = Retained equity calculated as retained earnings scaled by total assets; Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix C (cont)

Table C.5: Relationship between ownership by non-executive directors and dividends

	Panel A: OLS	Panel B: Logit	Panel C: Simultaneous equations (3 SLS)		
			DIVTA	NESO	LEV
DIVTA				0.172	-0.178
				(0.475)	(0.651)
NESO	0.003	1.432	0.005		-0.002
	(0.206)	(0.258)	(0.594)		(0.865)
ETR	0.004	0.269	0.004		
	(0.024)	(0.153)	(0.429)		
DFD	0.028	4.489	0.026		
	(0.000)	(0.000)	(0.000)		
BIND	0.007	2.145	0.010		
	(0.165)	(0.003)	(0.169)		
DISP	0.001	0.377	0.001		
	(0.039)	(0.027)	(0.048)		
LEV	-0.001	1.504	-0.005	-0.002	
	(0.581)	(0.193)	(0.253)	(0.226)	
ROA	0.061	2.914	0.059	0.061	-0.428
	(0.003)	(0.064)	(0.000)	(0.178)	(0.001)
CASH	0.208	-1.768	0.211		
	(0.000)	(0.321)	(0.000)		
GRW	-0.002	-0.021	-0.001		
	(0.019)	(0.872)	(0.044)		
VOL	-0.063	-10.841	0.068	-0.178	-0.412
	(0.134)	(0.026)	(0.067)	(0.043)	(0.059)
USUBSP	-0.007	2.761	-0.014		
	(0.199)	(0.190)	(0.139)		
ANST	0.002	0.299	0.001		
	(0.071)	(0.168)	(0.038)		
DRP	0.002	1.401	0.002		
	(0.483)	(0.001)	(0.467)		
RETA	0.027	2.744	0.026		
	(0.011)	(0.000)	(0.000)		
LIQ				0.046	
				(0.318)	
INV				0.026	-0.124
				(0.115)	(0.625)
MVEQ				$-0.182X10^{-5}$	
				(0.115)	
PPE					0.028
					0.000
INTERCEPT	-0.005	-4.386	0.008	0.052	-0.119
	(0.705)	(0.019)	(0.642)	(0.199)	(0.258)
Adjusted R^2 / McFaden R^2	0.479	0.361	0.473	0.027	0.132

This table reports the regression results regarding the relationships between ownership by non-executive directors and dividends. Different notations used in the table are defined as follows: DIVTA = Dividends to total assets; MSO = Percentage of ordinary shares owned by the directors of the board; NESO = Percentage of ordinary shares owned by the non-executive (independent and grey) directors of the board; ETR = Effective tax rate calculated as the ratio of annual tax expense and net earnings before interest and taxes; DFD = Franked dividends, a dummy 1 variable if the firm declares franked dividends; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by the taking natural log of total number of shareholders of a firm; LEV = Debt, calculated as the ratio of book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation and book value of total assets; GRW = Growth rate calculated as the average of annual growth rate of a firm's total sales of preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; ANST = Analysts calculated as the natural log maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; RETA = Retained equity calculated as retained earnings scaled by total assets; Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix C (cont)

Table C.6: Relationship between ownership by different groups of managers and dividends with random effect

	(1)	(2)	(3)
MSO	0.122		
	(0.084)		
ESO		0.176	
		(0.049)	
ISO			0.150
			(0.422)
ETR	0.041	0.039	0.004
	(0.032)	(0.038)	(0.006)
DFD	0.339	0.342	0.261
	(0.000)	(0.000)	(0.000)
BIND	0.013	0.008	0.001
	(0.019)	(0.022)	(0.042)
DISP	0.003	0.003	0.002
	(0.082)	(0.078)	(0.032)
LEV	-0.071	-0.072	-0.062
	(0.339)	(0.335)	(0.164)
ROA	0.112	0.113	0.103
	(0.416)	(0.409)	(0.069)
CASH	0.329	0.343	0.184
	(0.035)	(0.024)	(0.000)
GRW	-0.018	-0.017	-0.001
	(0.000)	(0.000)	(0.065)
VOL	-0.018	-0.019	-0.021
	(0.093)	(0.092)	(0.062)
USUBSP	-0.159	-0.151	-0.011
	(0.098)	(0.102)	(0.240)
ANST	0.055	0.054	0.003
	(0.012)	(0.011)	(0.144)
DRP	0.026	0.028	0.020
	(0.368)	(0.319)	(0.273)
RETA	0.086	0.087	0.021
	(0.003)	(0.003)	(0.073)
INTERCEPT	0.294	0.295	-0.003
	(0.012)	(0.012)	(0.708)
Adjusted R^2	0.338	0.336	0.332

This table reports the regression results regarding the relationships between ownership by different groups of managers and dividends with random effects. Different notations used in the table are defined as follows: DIVTA = Dividends to total assets; MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors of the board; ETR = Effective tax rate calculated as the ratio of annual tax expense and net earnings before interest and taxes; DFD = Franked dividends, a dummy 1 variable if the firm declares franked dividends; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by the taking natural log of total number of shareholders of a firm; LEV = Debt, calculated as the ratio of book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation and book value of total assets; GRW = Growth rate calculated as the average of annual growth rate of a firm's total sales of preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; ANST = Analysts calculated as the natural log maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; RETA = Retained equity calculated as retained earnings scaled by total assets; Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation consistent. Figures in the parentheses are P values.

Appendix C (cont)

Table C.7: Relationship between ownership by different groups of managers and dividend yield

Panel A	(1)	(2)	(3)
MSO	0.008		
	(0.017)		
ESO		0.007	
		(0.028)	
ISO			0.002
			(0.178)
ETR	0.002	0.004	0.001
	(0.178)	(0.197)	(0.173)
DFD	0.025	0.024	0.023
	(0.000)	(0.000)	(0.000)
BIND	0.001	0.001	0.001
	(0.186)	(0.176)	(0.231)
DISP	0.002	0.004	0.001
	(0.036)	(0.056)	(0.049)
LEV	-0.005	-0.007	-0.009
	(0.153)	(0.142)	(0.000)
ROA	0.021	0.024	0.026
	(0.076)	(0.084)	(0.149)
CASH	0.003	0.001	0.002
	(0.093)	(0.054)	(0.163)
GRW	-0.002	-0.001	-0.002
	(0.000)	(0.000)	(0.000)
VOL	-0.005	-0.001	-0.002
	(0.287)	(0.182)	(0.163)
USUBSP	-0.026	-0.019	-0.025
	(0.012)	(0.000)	(0.000)
ANST	0.004	0.002	0.004
	(0.007)	(0.010)	(0.008)
DRP	0.007	0.004	0.002
	(0.007)	(0.002)	(0.008)
RETA	0.008	0.012	0.010
	(0.010)	(0.008)	(0.011)
INTERCEPT	0.049	0.049	0.049
	(0.002)	(0.001)	(0.000)
Adjusted R^2	0.183	0.180	0.178

(cont)

Table C.7 (cont)

	Panel B			Panel C			Panel D		
	DY	MSO	LEV	DY	ESO	LEV	DY	ISO	LEV
DY		0.887	-0.314		1.072	-0.318		0.238	0.298
		(0.185)	(0.673)		(0.156)	(0.669)		(0.197)	(0.687)
MSO	0.008		-0.011						
	(0.047)		(0.138)						
ESO				0.006		-0.016			
				(0.044)		(0.095)			
ISO							0.003		0.027
							(0.424)		(0.892)
ETR	0.003			0.002			0.001		
	(0.264)			(0.158)			(0.182)		
DFD	0.032			0.029			0.020		
	(0.000)			(0.000)			(0.000)		
BIND	0.002			0.004			0.001		
	(0.180)			(0.271)			(0.267)		
DISP	0.001			0.002			0.001		
	(0.019)			(0.120)			(0.168)		
LEV	-0.004	-0.051		-0.003	-0.049		-0.001	-0.001	
	(0.023)	(0.067)		(0.011)	(0.021)		(0.031)	(0.856)	
ROA	0.028	0.065	-0.486	0.031	0.039	0.481	0.025	0.054	-0.484
	(0.041)	(0.505)	(0.000)	(0.076)	(0.614)	(0.000)	(0.018)	(0.414)	(0.000)
CASH	0.004			0.006			0.003		
	(0.056)			(0.025)			(0.081)		
GRW	-0.002			-0.001			-0.002		
	(0.009)			(0.009)			(0.007)		
VOL	-0.004	-0.266	0.434	-0.003	-0.084	0.435	-0.002	0.017	0.439
	(0.251)	(0.165)	(0.046)	(0.321)	(0.572)	(0.041)	(0.231)	(0.749)	(0.045)
USUBSP	-0.024			-0.032			-0.019		
	(0.007)			(0.013)			(0.008)		
ANST	0.005			0.006			0.005		
	(0.002)			(0.002)			(0.012)		
DRP	0.006			0.009			0.004		
	(0.061)			(0.001)			(0.056)		
RETA	0.008			0.006			0.003		
	(0.079)			(0.081)			(0.072)		
LIQ		0.118			0.079			0.028	
		(0.087)			(0.147)			(0.137)	
INV		-0.048	-0.109		0.216	-0.105		0.032	-0.112
		(0.834)	(0.682)		(0.236)	(0.694)		(0.617)	(0.678)
MVEQ		$-0.141X10^{-5}$			$-0.109X10^{-5}$			$0.152X10^{-5}$	
		(0.065)			(0.011)			(0.049)	
PPE			0.028			0.023			0.029
			(0.000)			(0.000)			(0.000)
INTERCEPT	0.052	0.015	-0.146	0.049	-0.037	-0.146	0.050	-0.009	-0.154
	(0.003)	(0.836)	(0.198)	(0.033)	(0.501)	(0.193)	(0.002)	(0.603)	(0.162)
Adj. R^2	0.165	0.053	0.129	0.158	0.049	0.131	0.149	0.032	0.118

This table reports the OLS and simultaneous equations system results regarding the relationship between managerial share ownership, dividends. Different notations used in the table are defined as follows: DY = Dividend yield, calculated as the ratio of dividends and market value of equity; MSO = Percentage of ordinary shares owned by the directors of the board; ESO = Percentage of ordinary shares owned by the executive directors of the board; ISO = Percentage of ordinary shares owned by the independent directors; BIND = Board independence calculated as the number of independent directors scaled by the size of the board; DISP = Dispersion, calculated by the taking natural log of total number of shareholders of a firm; ETR = Effective tax rate calculated as the ratio of annual tax expense and net earnings before interest and taxes; DFD = Franked dividends, a dummy variable 1if the firm declares franked dividends; LEV = Debt, calculated as the ratio of book value of debt to book value of total assets; ROA = Return on assets, calculated as net profit after tax before abnormal items scaled by the book value of total assets; CASH = Free cash flow calculated as the ratio of earnings before interest, tax, depreciation and amortisation and book value of total assets; GRW = Growth rate calculated as the average of annual growth rate of a firm's total sales of preceding five years; VOL= Volatility of earnings calculated as a standard deviation of earnings of preceding five years scaled by book value of assets; USUBSP = Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; RETA = Retained earnings to total assets; ANST = Analysts calculated as the natural log of maximum number of analysts following in a particular year; DRP = Dividend reinvestment plan, a dummy variable 1 if the firm declares dividend reinvestment plan; INV = Investment, calculated as the ratio of capital expenditure to book value of assets; MVEQ = Natural log of market value of common equity; LIQ = Liquidity calculated as the ratio of cash flow from operations and book value of assets; PPE = Tangible assets calculated as the ratio of property plant and equipment and book value of assets. Year dummies and industry dummies are not reported. The reported results are heteroskedasticity and autocorrelation. Figures in the parentheses are P values.

ADDENDUM

1. p.53 add at the end of para 2 "As MSO rises, the alignment effect gradually grows until it finally dominates the entrenchment effect. On the basis of this argument, this thesis tests for a quadratic specification of MSO to consider the impact on performance."

2. p.62 para 2 add after sentence 2 "The rationale for the selection of these control variables is as follows. Leverage may have a positive impact on firm performance. It may mitigate certain agency problems through debtholder monitoring and may also impact on MSO (Himmelberg et al., 1999). Cho (1998) argues that investment positively affects performance since the market reacts positively to the announcement of planned capital expenditure. Unaffiliated shareholdings are included to address the issue of monitoring by blockholders (Dahya et al., 2008). A greater percentage of board independence may result in a better performance because of improved monitoring (Anderson and Reeb, 2003). A large firm can generate more resources which may result in better performance through larger projects and attaining economies of scale (Demsetz and Lehn, 1985). Firm age is controlled since mature firms are likely to perform better than start up firms (Fahlenbrach and Stulz, 2009)."

3. p.66 add after sentence 1 "The positive significant coefficient for investment implies that higher capital expenditure may result in better performance since the market reacts positively to planned investment (Cho, 1998). The positive significant coefficient for board independence implies improved performance because of monitoring effect by the independent board members (Anderson and Reeb, 2003). The negative (positive) significant coefficient for firm size, when performance is measured by Q (ROA), is consistent with the findings of Anderson and Reeb (2003). The negative significant coefficient for firm age implies that older firms are the poor performers. Whilst this is contrary to expectations, it is consistent with the results of Dahya et al. (2008)."

4. p.64 para 2 add after sentence 2 "The use of leverage may lessen the need for external financing thereby resulting in an increase in MSO (Cho, 1998). Himmelberg et al. (1999) argue that firms with high investment spending may have high MSO to alleviate the monitoring problems caused by discretionary managerial investment which may result in a positive relationship between MSO and investments. Risk measured by volatility of earnings is included to examine the possibility that high firm specific uncertainty affects the level of MSO (Cho, 1998). Cho also argues that managers may prefer to have a higher stake in highly liquid firms due to the ease of discretionary spending. Finally, Holderness et al. (1999) report that the market value of equity negatively influences the proportion of total managerial ownership because managerial wealth constraints may affect the cost to managers of acquiring large share holdings in large firms."

5. p.65 add at the end of para 1 " Cho (1998) argues that volatility may adversely affect the investments due to the uncertainty of the expected relationship between current and future profitability. He also argues that highly liquid firms will make more investments."

6. p.55 add at the end of sentence 1 (commenced on p.54) "This thesis follows the ASX corporate governance council (2003) guidelines to determine the independence of the outside (independent) directors. The guidelines are detailed in footnote 13."

7. p.55 para 1 delete sentence 4 and read "Consequently, the sample size fell to 203 firms with 1273 firm-year observations. The panel is unbalanced with a minimum number of observations of 3 years and a maximum of 7."

8. p.56 delete para 1 and read as para 2 in p.65; p.57 delete Table 3.2 and read Table 3.2 in p.65 after para 2; p. 58 delete para 1 and read as para 3 in p.65 after Table 3.2; p.59 delete Table 3.3 and read Table 3.3 in p.65 after para 3.

9. p.63 add after sentence 3 "First of all, managerial ownership variables are regressed on the explanatory, control and instrumental variables using an OLS regression. Then performance is regressed on the residuals obtained from the first regression along with the explanatory and control variables. If the OLS estimates are consistent, the residuals obtained in the first stage should not be significantly different from zero. It is found that the coefficient value of the residuals of the first regression is significant at 1% level which rejects the null hypothesis that the OLS estimates are consistent."

10. p.70 add at the end of para 1 "For the MSO-Q relationship it is found that 187 firm-year observations have MSO in excess of the estimated turning point of 26.7% , which corresponds to 14.7% of the overall sample. For the MSO-earnings relationship it is found that 212 firm-year observations have MSO in excess of the estimated turning point of 23.9%, which corresponds to 16.7% of the overall observations. Overall, this suggests that the estimated turning points are driven by a non-negligible number of observations."

11. p.76 line 3 delete "MSO" and read "ESO"; line 4 delete "MSO" and read "ESO"

12. p.76 add at the end of para 1 "For the ESO-Q relationship it is found that 161 firm-year observations have ESO in excess of the estimated turning point of 19.9% , which corresponds to 12.6% of the overall observations. For the ESO-earnings relationship it is found that 167 firm-year observations have ESO in excess of the estimated turning point of 19.2%, which corresponds to 13.2% of the overall observations. Overall, this suggests that the estimated turning points are driven by a non-negligible number of observations."

13. p.67 add at the end of last sentence "A possible reason why a bidirectional relationship between MSO and earnings is not found could be earnings management. In other words, the earnings measured by ROA may not reflect the true financial performance. This may suggest that managers are cognisant of earnings management and it is conjectured that their own investment decisions are based on true financial performance."

14. p.67 add para 1 "Overall, the performance regressions suggest that performance is determined by MSO. This finding is at odds with Cho (1998) and Himmelberg et al. (1999) but consistent with the classical view of Jensen and Meckling (1976) and empirical work by Morck et al. (1988) and McConnell and Servaes (1990). The key findings of MSO regression is that the levels of MSO are also determined by the level of performance measured by Q. It is also found that firm size and leverage are negatively affecting the level of MSO when performance is measured by Q.This is consistent with the findings of Davies et al. (2005). The investment regressions show significant positive effects of performance (both measured by Q and ROA). The finding that performance has a positive effect on investment is consistent with the arguments of Cho (1998) that better performed firms will have large investment opportunities. Consistent with Cho (1998) MSO is also found to have an impact on firm level investment."

15. p.103 para 1 add after sentence 11 "This implies that firms with negative earnings are associated with earnings management."

16. p.104 after sentence 1 add " The negative significant coefficient of firm size is consistent with the findings of Klein (2002) and implies that smaller firms are associated with earnings management."

17. p.96 delete para 1 and read as para 1 in p.103; p.97 delete Table 4.2 and read as Table 4.2 in p.103; p. 97 delete para 1 and read as para 2 in p.103; p.98 delete Table 4.3 and read as Table 4.3 in p.103.

18. p.128 read para 1 "It is to be noted here that both Q and earnings measured by ROA in Chapter 3 are likely to be influence by accounting manipulation. Q as a performance measure could contain a fair share of accounting-related biases as the denominator (value of assets) may vary with accounting practices and discretion of managers. The earnings of a firm are also likely to be influenced by discretionary choices. That is, the performance measures used in Chapter 3 are not immune to manipulation by managers and the findings suffer from possible distortion. Therefore, the turning points reported for the ownership-adjusted earnings relationships could be higher than the reported turning points for the ownership-performance relationships reported in Chapter 3."

19. p.130 delete foot note 52 and read foot note 52 "The UK had a partial imputation tax system between 1973 and 1999. The rate of imputation was reduced post-1999."

20. p.177 add at the end of sentence 7 "The time series version of the modified Jones model is data intensive and its use would have resulted in a significant reduction in sample size. Similarly, a problem with using the cross sectional model is that some of the industries classified under the two digit ASX code do not have ten observations."

21. p.142 add after sentence 6 "Therefore, the tax status of dividends (franked/unfranked) is usually influenced by the source of profits (whether or not imputation credit are available) and geographical location of shareholders (whether or not resident in Australia)"

22. p.147 add at the end of sentence 1(commenced on page 146) "Additionally, as it is argued that a shareholder may have 'practical control' at a relatively low levels of MSO hence managers in Australia may be entrenched at lower levels of MSO. The findings by Farinha (2003) and Schooley and Barney (1994) suggest that entrenched managers are keen to increase dividends to reduce the agency costs. The issue of 'practical control' as well as tax preference arguments suggests a positive relationship between MSO and dividends at lower level of MSO. At a relatively higher level of MSO an alignment effect may set in resulting in a negative relationship between MSO and dividends since agency costs would reduce due to incentive alignment. However, the managers may still be influenced by tax incentives and increase payouts accordingly."

23. p.153 para 2 delete sentence 1 and read "Since dividend is constrained to fall between 0 and 1, the dependent variable payment of dividends (DDP) is written as log (DDP/1-p) where, p is the probability of payment of dividend."

24. p.153 model 5.1 delete "Error term ($+\varepsilon$)."

25. p.153 para 3 add after sentence 1 "The independent directors are likely to monitor managerial activities in a more effective way. Thus board independence may have a negative impact on dividends (Farinha, 2003). Dispersion represents the diffusion of stock ownership and a positive relationship is expected between dispersion and dividends (Rozeff, 1982). A higher effective tax rate implies that more imputation credits are available for distribution as franked dividends and the company should pay higher dividends. A positive relationship is expected between franked dividends and dividends since the shareholders can claim tax credits if a company declares franked dividends. Leverage may have a negative impact on dividends because of debt covenants and restriction imposed by debt holders (Farinha, 2003). In accordance with the signalling perspective, dividends and profitability should be positively related (Miller and Rock,