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Managerial Alignment versus Entrenchment Effects on Firm Performance in Australia

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ABSTRACT

This study investigates whether managerial share ownership serve to enhance or detract from firm performance in listed companies in Australia.

The results support both the 'convergence of interest' and 'entrenchment' hypotheses and therefore, the existence of a non-linear relationship between firm performance and managerial ownership. A cubic relationship is found to exist for Australian data, namely convergence to entrenchment to convergence, with maximum and minimum points occurring at approximately 12% and 58% of executive directors' shareholdings, respectively.

INTRODUCTION

This study seeks to investigate the extent to which managerial share ownership and internal corporate governance mechanisms impact the market-based performance of companies in Australia.

The key proposition lies at the centre of agency theory. Agency theory maintains that managers (agents) will act opportunistically to increase their personal wealth to the detriment of the owners (principals) of the organisation. The separation between ownership (principal) and control (agent) can be reduced however through the shareholdings held by managers in firms. This leads to the alleviation of agency costs, where positive incentive effects for managers are increased. Jensen and Meckling (1976) entitled this idea the 'convergence of interest' hypothesis, where the desires of shareholders and professional managers are converged through managerial ownership. Where agency costs become smaller due to the rise in manager shareholdings, it is likely that the firm's value will be higher as self-interested managers tend to grow their own private wealth and are less inclined to exploit company resources to maximise their own benefits at the expense of other shareholders. Nonetheless, it has been argued by Demsetz (1983) and Fama and Jensen (1983) that the convergence or alignment effect may not persist at higher levels of managerial ownership where entrenched managers find the extraction of company perquisites to be more valuable than the loss they would otherwise suffer from a reduction in the firm's value.

If these two effects (alignment and entrenchment) hold, a non-linear relationship should exist between firm performance and managerial ownership, with performance initially increasing as managerial ownership increases (and their interests converge with shareholders) and then decreasing as the ownership levels give rise to entrenchment effects.

Most prior studies in this area have relied upon a simplistic measure of managerial shareholding, where this construct is represented by the total shareholding of the board of directors (examples include: Morck et al. 1988; Short and Keasey 1999; Ng 2005). This incorrectly models the agency conflict between owners and managers, because independent, non-executive director shareholdings were included in the analyses. For this study, the executive director shareholdings will be identified separately from those of the non-executives to more accurately capture the managerial incentive alignment effect.

BACKGROUND

Agency theory defines the agency relationship where the principal (or owner) delegates tasks to an agent (or manager). The theory highlights costs associated with the principal-agent relationship which include the opportunistic behaviour or self-interest of the agent taking priority over the principal's interest. Mallin (2004) highlighted a number of dimensions to this including the agent misusing power for financial or other advantage, and the agent not taking appropriate risks in pursuance of the principal's interests often because managers are more risk-averse than the companies they lead. Another cost arises due to the principal and the agent having access to different levels of information; the agent (manager) usually being in control of superior and more detailed information than that of the owner (defined as information asymmetry). This requires the owner to institute expensive monitoring of the managers actions to redress the knowledge imbalance.

There are benefits to separation of ownership and control, it being essential for the operation of capital markets which allow the owners of capital to pool funding in companies and to hire professional managers. These benefits do not erase the agency costs, as noted by Denis and McConnell (2003, p.1) – "the conflicts of interest, however, combined with the inability to costlessly write perfect contracts or monitor the agents, ultimately reduce the value of the firm."

The theory suggests that the greater the share ownership of senior managers, the more likely they will make decisions consistent with maximising owner wealth, as ultimately this will maximise their own wealth (Ng 2005). In contrast, it should be noted that a number of recent governance studies have produced evidence of a non-linear impact of managerial ownership, where "at high levels of managerial ownership managers become entrenched with a consequent decline in shareholder returns." (O'Sullivan 2000, p.401).

The results of our study provides evidence of a cubic form of executive ownership and firm performance relationship in Australia with executive management moving from alignment to entrenchment to alignment to accumulate. Using a number of control variables, firm size, debt ratio and board size was found to significantly impact on form performance.

MANAGERIAL OWNERSHIP AND FIRM PERFORMANCE

The 'convergence of interest' hypothesis has stimulated considerable interest in the study of the relationship between firm performance and the allocation of shares among managers and external owners (McConnell and Servaes 1990). The early research on this relationship considered the linear form only, however later work extend this to consider non-linear (e.g. McConnell and Servaes 1990, 1995; Kole 1995; Short and Keasey 1999). The non-linear analysis arises from the consideration of a further aspect of the relationship, that at higher levels of managerial ownership, managers may become entrenched and use their power to extract personal gains at the expense of the overall company and particularly to the detriment of minority shareholders.

Short and Keasey 1999 supported this argument for entrenchment on the basis that at high levels of executive share ownership, external shareholders find it difficult to monitor the actions and decisions taken by managers. They contended that "at certain levels of ownership, managers find it worthwhile to consume perquisites which reduces the firm's value. Moreover, they have sufficient control to follow their own objectives without fear of discipline from other ownership interests" (Short and Keasey 1999, p.81).

Morck et al. (1988) provided initial evidence for the existence of a relationship between firm value and inside equity ownership which is non-linear. They analysed the relationship between managerial ownership and performance in a study of 371 Fortune 500 firms from 1980. Using primarily Tobin's Q as a measure of performance and the combined shareholdings of all board members who have a minimum stake of 0.2% as a measure of managerial ownership, they employed a regression (allowing the coefficients on the ownership variable to change at the 5–25% ownership levels) to estimate the relationship between these variables. Their results suggest a significant non-monotonic relation (increasing between 0–5%, decreasing between 5–25%, and increasing beyond 25%). They also found that the size of the positive correlation with performance to given changes in managerial ownership is considerably lower beyond the 25% level when compared to the one in the 0–5% range. This suggests that the 'convergence of interest' effect is at its strongest at relatively low levels of managerial shareholding.

Hermalin and Weisbach (1988) estimated similar regressions to Morck et al. (1988) for 134 NYSE firms over a five-year period. They found a significant non-monotonic relationship between Tobin's Q and the combined percentage of shares held by the current CEO and any former CEOs remaining on the board of directors. Their results differ from those of Morck et al.(1988) in that the relation between Tobin's Q and CEO shareholding is positive between 0–1%, negative between 1–5%, positive between 5–20%, and negative at higher levels. This suggests a more prolonged 'entrenchment' effect with negative consequences for the firm from 20% ownership upwards.

The above finding is supported by McConnell and Servaes (1990) who examined the relation between Tobin's Q and ownership in two cross-sectional samples of 1,000 Compustat firms. They found a positive relationship with managerial ownership and a negative coefficient with managerial ownership squared. Confirming that the relationship between managerial ownership and Q is curvilinear, with the value of the firm first increasing (ownership between 0% and approximately 40–50%) and then decreasing as managerial

ownership becomes more concentrated (above 50%). They produce similar results when the same control variables used by Morck et al.(1988) are introduced and also when accounting profits are substituted as a performance measure.

Using a cross-sectional time-series sample of firms listed on the New Zealand Stock Exchange (NZSE) for the years 1991–97, Prevost et al. (2002b) found a non-linear relationship between inside ownership (as measured by the proportion of equity held by all members of the board of directors including top officers) and firm performance (as measured by Tobin's Q ratio). They found that the coefficient is negative but insignificant for inside ownership less than 1%, significantly positive for the range of 1–20%, and significantly negative at levels of inside shareholding greater than 20%. The study explained that "at extremely low levels of inside ownership, marginal increases in inside ownership serve to provide little incentive to enhance shareholder value possibly because the stakes are not significant enough to impact insider behaviour in a positive manner" (Prevost et al. 2002b). Overall, their results support the conclusions of other studies (Morck et al. 1988; McConnell and Servaes 1990; Short and Keasey 1999; de Miguel 2004; Mura 2007; Guedri and Hollandt 2008; Hu and Zhou 2008) in that the relationship between inside ownership and firm performance is not a simple linear one. Importantly, the study showed that the incentive effect (or the shareholder wealth maximisation effect) is dominated by the effect of entrenchment at the extremely high levels of ownership, i.e. beyond 20%, when insiders are unlikely to be subject to the discipline of takeovers.

Hu and Zhou (2008) examined the managerial ownership–performance relationship using a sample of 1,500 non-listed Chinese firms for the three-year period 1998–2000. Consistent with many previous studies, they found the ownership–performance relationship to be non-linear in both of their quadratic regressions. The coefficients indicated an inverted U-shape relationship between performance and ownership (as measured by the percentage of the firm's equity held by the manager). For the return on assets measure of performance, the coefficients are insignificant, although in the expected direction. A model based on value-added produces a significant non-linear ownership–performance relationship. An inflection point occurs at managerial ownership of 75% in the regression of return on assets and at 53% in the regression of value-added. These inflection points are generally much higher than estimates for companies in other countries reviewed.

Guedri and Hollandts (2008) examined the impact of employee stock ownership on firm performance. In their study, firm performance was measured using two ratios. One is the return on invested capital ratio which is defined as net income after taxes minus dividends divided by total capital. The other is the market-to-book ratio which is defined as market capitalisation of the firm divided by its book value. A generalised least-square cross-sectional time series analysis of a sample of 230 firms from the SBF 250—the French index of the leading 250 companies in terms of market value listed on the Paris stock exchange—was done over six years (2000–05). This provided strong support for an inverted U-shaped relationship between employee share ownership (defined as the percentage of company shares owned by non-executive employees relative to the total number of company shares) and accounting-based performance measures (return on invested capital). However, this relationship was not supported when a market-based performance measure (market-to-book ratio) was used. In the 'return on invested capital' model, the coefficients of ownership variables—employee stock ownership and employee stock ownership2—are of expected signs (positive and negative, respectively) and both are statistically significant at 1% level of confidence. The results revealed that the inflection point occurs at about 1.67% of the employee stock ownership. In contrast, even though the study reported a positive coefficient for the 'employee stock ownership' variable and negative coefficient for the 'employee stock ownership2' under the model of 'market to book ratio', both effects of employee stock ownership are not statistically significant.

In summary, the vast majority of the literature supports the existence of a non-linear relationship between managerial ownership and firm performance, with evidence to support both the 'convergence of interest' and 'entrenchment' hypotheses, dependent upon the level of ownership. Using Tobin's Q as the main measure of the performance, various studies in the U.S., U.K., Spain and New Zealand have confirmed the relationship between the performance of firms (usually measured by Tobin's Q) and managerial ownership. The form of the relationship generally supports the notion of a non-linear function which progresses from alignment to entrenchment and then, in a few cases, returning to alignment as management ownership increases.

HYPOTHESIS DEVELOPMENT

The proposition is that there is a non-linear relationship between managerial ownership and company performance arising from a 'convergence of interest' effect at low levels of shareholding and a 'managerial entrenchment effect' at higher levels of shareholding.

A non-linear relation relationship between firm performance and managerial ownership is suggested, with performance initially increasing as managerial ownership increases and their interests converge with shareholders, and then decreasing as the ownership levels give rise to entrenchment effects.

The precise form of the non-linear relationship remains an issue for debate. Morck, Shleifer, and Vishny (1988) suggest a significant non-monotonic relationship which increases from 0–5%, decreases between 5–25%, and then reverts to increasing beyond 25%. They also noted that the relative size of the positive change in performance to changes in managerial ownership is substantially less above the 25% level compared to the 0–5% range. Hermalin and Weisbach (1988) similarly found a non-monotonic relationship between managerial ownership and performance; however the turning points are different. Their results show a positive relationship from 0–1%, negative between 1–5%, reverting to positive between 5–20%, and once more decreasing beyond 20%. Prevost, Rao, and Hossain (2002a) provided evidence of an insignificantly negative relationship between firm performance and inside ownership at a low range (0–1%), a positive and significant one at the range of 1–20% ownership level, and a significantly negative relationship at ownership levels higher than 20% in a sample of firms listed on the New Zealand Stock Exchange (NZSE) for the years 1991–97. de Miguel (2004) provided new evidence on the relationship between the value of Spanish firms and their ownership structures. He found that for insider ownership values between 0–35%, any increment in this variable will be translated into increments in value. When ownership ranges from 35–70%, value decreases as insider ownership rises. Finally, for the very highest ownership levels—above 70%—the convergence-of-interest seems to dominate the relationship again.

HYPOTHESIS 1:

Firm performance increases with managerial ownership at moderate levels, where the interests of managers and owners converge (convergence-of-interest hypothesis), and decrease with managerial ownership at high levels, where entrenched owners reduce the effective independence and monitoring ability of shareholders (entrenchment hypothesis).

CONTROL VARIABLES

A number of additional variables are included to control for other potential influences on the performance of firms.

■*Firm Size*

The firm's market capitalisation is included to control for the potential effects of firm size on corporate performance. Short and Keasey (1999) proposed two major avenues through which this effect may occur. Firstly, a financing effect, in which larger firms find it easier to generate funds internally and to access funds from external sources, lowering the overall cost of capital. Secondly, large firms may create higher entry barriers, thereby reducing competition and benefitting from above-normal profits.

■*Debt Ratio*

The debt ratio is defined as the book value of total debt divided by total assets and this influences company performance in two ways. Firstly, the presence of debt ensures that management decisions and the firm's operation are being externally monitored by debt holders. Stiglitz (1985) contends that lenders, particularly banks, effectively perform a function of management supervision. Secondly, the use of financial leverage creates contractual obligations for managers to meet fixed future debt repayments, thereby reducing the funds available to management for discretionary consumption of perks; moreover, debt requires management to become more efficient to reduce both the probability of bankruptcy and the potential loss of their own reputation (Grossman and Hart 1982).

■*Industry Classification*

Related industry effects account for the nature of the competitive environment in which a firm operates. For example, the number and size-dispersion of industry rivals and the rate of growth of the industry in general. Since performance may also depend on industry affiliations, a number of studies (e.g. Vafeas and Theodorou 1998; Ellstrand et al.

1999) have included a dummy variable for industry to capture these industry effects and to control for the possibility that Tobin's Q and the internal corporate governance mechanisms are related through certain industries.

■ Board Size

A number of studies have researched the impact of board size on firm performance, generally discovering a negative relationship (Yermack 1996; Dalton et al. 1999; Cheng, Evans J, and Nagarajan 2008, Bennedsen, Kongsted, and Nielsen 2008.

The disadvantages associated with large boards have been addressed by many authors. "When boards get beyond seven or eight people, they are less likely to function effectively and are easier for the CEO to control" (Jensen 1993, p. 865). A board with "eight or fewer members engenders greater focus, participation, and genuine interaction and debate" (Firstenberg and Malkiel 1994, p. 34). According to Goodstein, Gautam, and Boeker (1994), strategic actions and changes are less likely to be initiated when there are a large number of board members. And, as reported by Judge Jr and Zeithaml (1992), larger boards are less likely to become involved in strategic decision-making. Yermack (1996) who first empirically documented a significant inverse relation between board size and firm performance concluded that the costs associated with large boards (e.g. coordination, communication and director free-riding costs) are not sufficiently offset by its benefits alone.

VARIABLE MEASUREMENT AND DESCRIPTIVE DATA ANALYSIS

■ Dependent Variable: Firm Performance

In the literature on corporate governance, firm performance has been measured as market-based (de Miguel 2004; Mura 2007), accounting-based (Dhnadirek and Tang 2003; Ng 2005) or both (Short and Keasey 1999; Bonn 2004; Guedri and Hollandts 2008). The majority of studies have followed the prescription of the Demsetz and Lehn (1985) study by using Tobin's Q as the measure of firm performance. This is seen to have an advantage over accounting performance by incorporating a current perspective of the position of the firm (as determined by market price), rather than an historical perspective based on accounting results as measured by accounting conventions (Demsetz and Villalonga 2001). In accepting this approach, this study employs Tobin's Q which measures the degree to which the market values the firm above (or below) the book value of its assets and provides an assessment of the efficiency with which management is utilising those assets. For the purpose of this study, Tobin's Q is defined as the sum of market value of equity and market value of preferred shares and book value of total liabilities, divided by the book value of total assets. This definition has been widely employed by other researchers in this field (refer Demsetz and Villalonga 2001; Mura 2007). The Australian data for market capitalisation was collected from the financial analysis database provided by Aspect Huntley and the book value of total liabilities and total assets was sourced from the corresponding company's annual report provided by Connect 4. The sample includes 250 companies randomly selected from a population of all companies listed in the Stock Exchange in the 2005 financial year.

Table 1 shows the mean Tobin's Q to be positive compared to a previous Australian survey of 114 listed companies in the financial year 1999-2000 found a mean Tobin's Q of 1.80 (Welch 2003). Approximately 75% of Australian firms report their Tobin's Q to be higher than 1.0.

Table 1: Mean, Median and Quartile Range for Tobin's Q for the Year 2005

Min.	Max.	Mean	Median	Percentiles			
				10th	25th	75th	90th
0.000	10.430	2.008	1.460	0.790	1.018	2.393	3.845

■ Independent Variables: Continuous
■ Firm Size, Board Size, Management Ownership Debt Ratios

The sample descriptive statistics show at the mean between the samples, the Australian sample of $400.12 million for the accounting measure of total revenue and for market capitalisation $538.05 million. At the median, the sample of $8.03 million for the accounting measure of total revenue and for market capitalisation here,' $20.27 million. The median measures of size were significantly lower and measures (market and revenue) suggesting a highly-skewed data distribution. This will be further investigated prior to the

use of least-square regression, to ensure the assumption of normal distribution of sample data is met (Table 2, panel A).

Board size is defined as the total number of directors on the company's board of directors. The study finds that boards of director average five directors for the Australian datas (Table 2, panel B).

For the purpose of this study, 'managerial ownership' is measured as the proportion of total equity owned by executive directors in the firm, as disclosed in the annual reports at the end of 2005 financial year. This definition is more precise than that utilised in many ownership/performance studies where managerial ownership is defined as ownership by members of the board of directors, including non-executives (e.g. Morck et al. 1988; Short and Keasey 1999; Ng 2005) (Table 2 panel C).Debt ratio, objective as total liabilities developed by total assets is shown in Table 2, panel D.

Table 2: Descriptive statistics

Panel A: Mean, Median and Quartile Range for Firm Size for the Year 2005
(all figures shown in Australian $ millions)

Variables	Min.	Max.	Mean	Median	Percentiles			
					10th	25th	75th	90th
Total Revenue	0.000	16,800	400.120	8.027	0.003	0.479	105.210	715.840
Market Capitalization	0.000	26,100	538.050	20.270	3.551	7.133	135.290	1,279.500

Panel B: Mean, Median and Standard Deviation for Board Size by Country for the Year 2005

Min.	Max.	Mean	Median	Standard Deviation
3	12	5.06	5.00	1.795

Panel C: Mean, Median and Quartile Range for Managerial Ownership for the Year 2005

Min	Max	Mean	Median	Percentiles			
				10th	25th	75th	90th
0.000	1.000	0.099	0.014	0.000	0.001	0.127	0.317

Executive Directors' Shareholdings of:	Number of Firms	Percentage of Firms
More than 40%	17	6.88
More than 30%	30	12.15
More than 20%	45	18.22
More than 10%	69	27.94

Panel D: Mean, Median and Quartile Range for Debt Ratio for the Year 2005

Min.	Max.	Mean	Median	Percentiles			
				10th	25th	75th	90th
0.005	3.363	0.362	0.304	0.033	0.085	0.523	0.689

Note: Debt ratio is defined as total liabilities divided by total assets

Distribution of Debt Ratio in the Sample

Debt Ratio of:	Number of Firms	Percentage of Firms
More than 75 %	13	5.20
More than 50%	71	28.40
More than 25%	142	56.80

■*Industry*

An industry dummy variable was included as a control variable in the analysis as previous researchers have found this to be a significant determinant of company performance Choi, Park, and Yoo 2007; Hu and Zhou 2008; Guedri and Hollandts 2008). In Australia, the largest number of companies is in materials (33%), although the largest group by market capitalisation is energy (32% of the sample mean).

Table 3: Sample Industry Classification by Revenue and Market Capitalisation

Sector	No. of Companies	Mean (Median) Total Revenue (in millions)	Mean (Median) Market Capitalisation (in millions)
Energy	29	1,007.80 (1.66)	1,719.20 (41.94)
Materials	84	130.42 (0.52)	151.25 (13.90)
Industrials	27	639.77 (53.08)	365.83 (18.74)
Consumer Discretionary	44	372.02 (93.12)	638.37 (63.87)
Consumer Staples	15	1,021.60 (157.40)	1,679.00 (98.68)
Health Care	22	401.39 (2.45)	279.07 (12.27)
Information Technology	22	77.08 (26.33)	77.48 (11.05)
Telecommunicatio n Services	5	40.01 (13.08)	70.25 (8.33)
Utilities	2	77.29 (77.29)	301.88 (301.88)

RESULTS AND DISCUSSION

■*Sample Selection for Hypotheses Testing*

To examine the relationship between managerial ownership and firm performance, 250 companies were randomly selected from a population of all companies listed in the Stock Exchange in the 2005 financial year. Finance-related companies including banking, insurance and trust companies were excluded from the sample and replaced, as their accounting reporting requirements and capital structure varies greatly from other companies and would distort the overall results.

As recommended by Field (2000, p.126) outliers were identified for each model tested on the basis of standardised DFBETAS and were deleted when this statistic exceeded an absolute value of 2 (refer Stevens 1992).

The study initially investigates the hypothesis of non-linear association between corporate performance and the proportion of shares owned by the executive directors of the companies. Due to the mixed results generated by previous research studies (Morck et al. 1988; Ng 2005; Al Farooque et al. 2007; Mura 2007; Hu and Zhou 2008; Guedri and Hollandts 2008; Schmid and Zimmermann 2008), tests are undertaken for both forms—a quadratic (curvilinear) and a cubic—of the relationship between firm performance and executive director shareholdings.

In the analysis, Tobin's Q ratio is regressed against three variables of managerial ownership and other control variables to gauge their impact on firm performance. The study, therefore, specifically tests the following model:

$$\text{Tobin's Q} = a + \beta_1 \text{EDOWN} + \beta_2 \text{EDOWN}^2 + \beta_3 \text{EDOWN}^3 + \gamma \text{Control Variables.}$$

Where EDOWN is the proportion of shares held by executive directors, EDOWN^2 and EDOWN^3 are the square and cube, respectively, of the proportion of equity shares held by executive directors.

Morck et al. (1988) adopted predetermined turning points, however, as they concluded "there is no theoretical guidance for the choice of turning points on the piecewise regression". As a result, this study follows numerous previous authors in allowing the coefficients on the ownership variables to determine their own turning points, Guedri and Hollandts 2008; Schmid and Zimmermann 2008).

In order to control for other possible effects on firm performance (Tobin's Q), four additional variables to be included in the regression models are as follows: firm size (by market capitalisation); debt ratio (defined as the book value of total debt divided by total assets); an industry dummy variable (identifying the two major industry groups); and board size (defined as the number of directors on the main board).

The results of the three regression models are presented in Table 4. Model 1 refers to the first stage in the hierarchy when only one of the three managerial ownership variables—EDOWN—is used as one of the predictors. Model 2 refers to the second stage when the square of the EDOWN is added to the first model. Model 3 refers to when all three variables of managerial ownership and control variables are included.

The results of the Australian sample are shown in Table 4. The adjusted R^2 reveals that 5.5% of the variability in firm performance is accounted for by the first model and

EDOWN is statistically insignificant. The addition of EDOWN^2 produces only a minor and statistically insignificant change in the explanatory power of the model ($p = 0.107$). However the inclusion of EDOWN^3 contributes substantially to the model's ability to predict the performance of Australian firms ($p = 0.003$). The coefficients on the variables EDOWN and EDOWN^3 are positive and statistically significant at the 0.10 and 0.01 level of confidence, respectively. For the variable EDOWN^2, while being negative, its coefficient is also statistically significant (at the 0.05 level of confidence). With EDOWN^3 included, the cubic form of executive ownership is shown to significantly contribute to firm performance – initially positively at low levels of executive shareholding, then negatively as shareholding grows and entrenchment effects become pronounced and finally, positively at very high levels of shareholding where it could be hypothesised that the agency problems are overcome as the principal–agent divide is removed.

Table 4: Regression analysis of Tobin's Q on executive directors' shareholdings, firm size, debt ratio, industry and board size for listed Australian companies in 2005 (p-values in parentheses below coefficients)

Variable[a]	(1)	(2)	(3)
Constant	-0.238	-0.049	-0.359
	(0.718)	(0.942)	(0.590)
EDOWN	-0.046	-2.040	4.623*
	(0.932)	(0.131)	(0.077)
EDOWN^2		3.217	-22.833**
		(0.107)	(0.012)
EDOWN^3			21.795***
			(0.003)
Firm Size	0.192***	0.184***	0.194***
	(0.000)	(0.000)	(0.000)
Debt Ratio	0.231	0.184	0.292
	(0.437)	(0.537)	(0.324)
Industry	-0.098	-0.106	-0.083
	(0.637)	(0.606)	(0.681)
Board Size	-0.238***	-0.231***	-0.235***
	(0.001)	(0.001)	(0.001)
R^2	0.075	0.085	0.117
Adjusted R^2	0.055	0.062	0.091
F-Statistic	3.868***	3.683***	4.523***
Inflection point(s)[b]			12.28%(max.)
			57.56%(min.)

Where: ***p < 0.01, **p < 0.05, and *p < 0.10

[a]Tobin's Q = Year-end book value of total liabilities plus market capitalisation divided by year-end book value of total assets

EDOWN = The proportion of total equity held by executive directors
EDOWN^2 = The proportion of total equity held by executive directors squared
EDOWN^3 = The proportion of total equity held by executive directors cubed
Firm Size = The natural log of market capitalisation.
  (Where market capitalisation = market value of equity + market value of preferred shares)
Debt Ratio = Total liabilities as a proportion of total assets
Industry = 1 for companies in mining and resource sectors; and 0 otherwise
Board Size = The number of directors in the boards

[b]The inflection point indicates the percentage of equity shareholdings when Tobin's Q is at its maximum or minimum in the estimated regressions

The findings in Model 3 in Table 4 are consistent with the general prediction by Morck et al. (1988) of a nonlinear association between the value of firms and the proportion of shares controlled by company insiders. More specifically, the results are evidence of cubic form of executive ownership–firm performance relationship in Australian firms as found by Morck et al. (1988), Mura (2007) and in other countries with executive management moving from alignment, to entrenchment and again back to alignment as their equity shareholdings continue to accumulate.

Among the control variables, firm size and board size enter the regression significantly. The coefficients of firm size and debt ratio are positive and the coefficients of board size and industry are negative.

After the inflection points of a cubic function are calculated, the study shows that maximum and minimum points occur at approximately 12.28 % and 57.56% of executive director shareholdings, respectively. That is, the value of Australian firms is found to be maximised at the insider ownership of 12.28% and minimised at their shareholdings of 57.56%, as compared to the findings in other countries.

Consequently, the results indicate that firm performance (as measured by Tobin's Q) is positively associated to executive director shareholdings in the range of 0–12.28% and inversely associated in the range of 12.28–57.56% and again positively associated when their shareholdings are more than 57.56%.

The evidence supports both of the convergence-of-interest and the entrenchment hypotheses. Between 0–12.28% of insider shareholdings, an increase in this value will cause a rise in performance of firms, as the executives are encouraged to maximise value of the firms as a result of the accumulation of their personal shareholdings. At the ownership of 12.28%, firm performance starts to deteriorate and continues to fall until the shareholding reaches 57.56%. The result suggests that managers become entrenched at this higher shareholding and use their increased power to promote their own best interests in priority to the shareholders'. Finally, beyond 57.56% of insider ownership, the effect of alignment (again) comes back into play, as agency costs reduce due to the reduction in the principal–agent divide and manager individual wealth is dramatically tied to share outcomes.

For this sample, 182 (73.98%) companies lie below the maximum point, 56 (22.76%) companies lie between the two turning points- where performance is worst, and 8 (3.25%) companies lie above the minimum point. About three quarters (73.98%) of the Australian companies under study have executive directors holding less than 12.28 % of shares.

The Australian model was found to support a cubic specification. The cubic form indicates a significant positive relationship at low levels of executive shareholding and a significant negative relation after shareholding reaches a certain level (in this case 12.28%), in support of the original hypothesis. However, at very high levels of executive shareholding (above 57.56%), the relationship again becomes positive and statistically significant. An estimated 77.23% of Australian companies in the sample were operating with executive director shareholdings in the optimal range, comprising 73.98% at the lower level and 3.25% at the higher level.

Overall, the study provides evidence to support the view that the association between firm performance and executive shareholdings is non-linear in form. The specifications show that executive ownership significantly contributes to firm performance – initially positively at low levels of shareholding, then negatively as shareholdings grow and entrenchment effects dominate the convergence-of-interest effects. More than 75% of companies had executive director equity holdings in a range which contributed positively towards increased firm performance.

SUMMARY AND CONCLUSION

The results provide evidence of a cubic form of executive ownership and firm performance relationship in Australian firms with executive management moving from alignment to entrenchment to alignment as their equity shareholdings continue to accumulate. The study shows that maximum and minimum points occur at approximately 12.28% and 57.56% of executive director shareholdings, respectively. That is, the value of Australian firms is found to be maximised at the insider ownership of 12.28% and minimised at their shareholding of 57.56%. From 0–12.28% of insider shareholding, an increase in this value will cause a rise in performance of firms. At the ownership level of 12.28%, firm performance starts to deteriorate and continues to fall until the shareholding reaches 57.56 %. Finally, beyond 57.56 % of insider ownership, the effect of alignment, again dominates, as agency costs reduce due to the reduction in the principal–agent divide and the manager's individual wealth becomes more dramatically tied to share outcomes. Among the control variables, firm size, debt ratio and board size enter the regression significantly. The coefficients of firm size and debt ratio are both positive whereas the coefficients of board size and industry are negative.

This study provides an indication that if the executive form of ownership can be controlled and made use of appropriately (for example, with managerial ownership to be maintained at 0–12.28% and 57.56–100% in Australian firms), corporate performance can be optimised due to convergence of interest factors. Approximately (22.76%) of firms fall within the entrenchment range and are not maximising performance.

This leads to the conclusion that aligning the interests of management and shareholders may not be resolved simply by rewarding managers with ever larger equity holdings (e.g. shares or options), as there is a certain range of ownership that could potentially damage the performance of companies. In common with the majority of studies in this area, the current analysis implicitly assumes that causality moves from managerial ownership to firm performance. In a contrary view, Kole (1996) found evidence of a reversal of the direction of causality in the ownership–performance relationship; she suggested that corporate value could be a determinant of the ownership structure rather than a result of it (Kole 1996, cited in Ng, 2005). A positive relationship found between firm performance and managerial ownership could possibly be because: "the managers of successful firms are more likely to be rewarded with additional forms of stock ownership or managers and founders are more inclined to retain a large fraction of successful firms" (McConnell and Servaes 1990). Although a majority of researchers have found the ownership to performance direction to be robust (Ng 2005; Mura 2007), an extension of this study to investigate the possible endogeneity of firm performance and managerial ownership via simultaneous equations would be a fruitful area of further research.

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