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## MANAGERIAL OWNERSHIP AND FIRM PERFORMANCE IN THAILAND: AN EMPIRICAL ANALYSIS

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### Abstract

This study investigates whether managerial share ownership serves to enhance or detract from firm performance in listed companies in Thailand. The convergence-of-interest hypothesis asserts that firm value increases as management ownership rises. On the other hand, when managers own a substantial fraction of the firm shares, then voting power or other influence may satisfy other non-value-maximizing objectives without endangering other positions. This gives rise to the entrenchment hypothesis, which suggests that excessive insider ownership has a negative impact on corporate performance. The results of this study support both the alignment and entrenchment efforts and therefore the existence of a non-linear relationship between firm performance and managerial ownership. Firm size and industry are also shown to impact significantly on firm performance in Thailand.

**Keywords:** insider, convergence, entrenchment, ownership, agency, performance

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### Introduction

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. The incentive effect of executive share ownership (Jensen and Meckling 1976) is one of corporate governance mechanisms that can help mitigate the conflicts identified through agency theory.

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).

While most previous studies of the managerial ownership-performance relationship have been done using data from developed countries (e.g. Demsetz

and Lehn 1985; Morch, Shleifer and Vishny 1988; Prevost, Rao, and Hossain 2002; de Miguel 2004; Mura 2007; Schmid and Zimmermann 2008) where the corporate ownership structure is of a more diffuse form, there has been little research done on corporate governance in less-developed countries. Of the few that have done such research, La Porta et al. (1998) associated low levels of investor protection with highly-concentrated share ownership. They found that in the countries studied (including Thailand), the primary agency conflict is between large and minority shareholders. Claessens et al. (2000) additionally revealed that, except for Japan, most publicly-traded corporations in nine East-Asian countries had a high level of ownership concentration and large number of family-controlled firms. This research, therefore, extends the work of previous researchers to take a closer look at Thailand, where there are important differences in ownership structure and in the associated type of agency problems-between controlling/inside shareholders and minority shareholders. Further, the limited numbers of financial studies conducted in Thailand have relied purely on accounting performance measures, whereas this study adopts a modified market measure, namely, Tobin's Q.



The result of our study provides evidence of a cubic form of executive ownership and firm performance relationship in Thailand with executive management moving from alignment to entrenchment to alignment as their equity shareholdings continue to accumulate. When using a number of control variables both firm size and industry were found to significantly impact on firm performance.

### Literature Review

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. 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.

Using an unbalanced panel dataset of listed non-financial U.K. firms for the period 1991–2001 and the Generalized Method of Moments (GMM methodology) to control for the problems of endogeneity of independent variables and the firms' fixed effects, Mura (2007) tested for a cubic relationship between firm performance (Tobin's Q as proxied by the ratio of the book value of total assets minus the book value of equity plus the market value of equity to the book value of assets) and board ownership (defined as the total percentage of shares held by the board of directors). The results confirmed

that the direction of causality runs from ownership to performance, not vice versa, and support the existence of a non-linear function in the form predicted by the alignment and entrenchment hypotheses. That is, the relationship moves from positive to negative and then back to positive again at high levels of board ownership. The model reveals two inflection points of approximately 15–45% (which is very close to the ones found by Short and Keasey in 1999). An increase in directors' shareholding is aligned to improved performance at low (0–15%) and at high levels of ownership (above 45%), and it is associated with reduced performance at medium levels (15–45%). Similar to Short and Keasey (1999) and Lasfer (2002), the findings indicate that U.K. directors exhibit the performance associated with 'entrenchment' at generally higher ownership levels than equivalent directors in the U.S..

A number of studies investigating the ownership–performance relationship have been conducted in countries outside Britain and the U.S.. In Spain, de Miguel (2004) found evidence on the relationship between firm value and insider ownership. Extending the piecewise linear regression of Morck et al. (1988) and following Short and Keasey (1999) and other studies, they studied the turning points for insider ownership variables. Their results confirmed the significant cubic relationship of value–insider ownership (even when controlling for endogeneity) and support the convergence-of-interest and entrenchment hypotheses. He found that firm value increases as insider shareholding increases from zero to 35% and decreases as ownership continues to rise to 70%. Finally, for the very high levels of insider ownership (beyond 70%), the entrenchment effect is then dominated by the effect of alignment. Thus, the cubic specification found in this study generally has the same pattern of direction with those found in the U.S. and the U.K. (Morck et al. 1988; Holderness et al. 1999; Short and Keasey 1999; Mura 2007) – with the exception that Spanish insiders get entrenched at higher ownership levels (refer Table 1).

In Greece, Kapopoulos and Lazaretou (2007) examine data for 175 Greek listed companies, used two measures of performance, Tobin's Q and the accounting profit. Their findings supported the existence of positive linear relationship between profitability (on both measures) and ownership structure, consistent with the convergence of interest hypothesis. They did not test for the existence of a non-monotonic relationship and therefore no conclusion can be reached on the possibility of an entrenchment effect occurring at higher levels of ownership.

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. (2002) 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. 2002). 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 Hollandts 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.

Table 1. Summary of Turning Points for Executive Shareholding and Firm Performance

COUNTRY	Executive share ownership for high performance	Executive share ownership for low performance	Lower Limit (Inflection Point)	Upper Limit (Inflection Point)
U.S. (Morck, Shleifer, and Vishny 1988)	0–5% and 25–100%	5–25%	5%	25%
U.S. (McConnell and Servaes 1990)	0–49.4% (1976)  0–37.6% (1986)	49.4–100% (1976)  37.6–100% (1986)	49.4% (1976)  37.6% (1986)	N/A (1976)  N/A (1986)
U.K. (Short and Keasey 1999)	0–12.99% and 41.99–100%	12.99–41.99 %	12.99%	41.99%
New Zealand (Prevost, Rao, and Hossain 2002)	1–20%	20–100% (or greater than 20%)	20%	N/A
Spain (de Miguel 2004)	0–35% and 70–100%	35–70%	35%	70%
U.K. (Mura 2007)	0–15% and 45–100%	15–45%	15%	45%
China (Hu and Zhou 2008)	0–53%	53–100%	53%	N/A
France (Guedri and Hollandts 2008)	0–1.67%	1.67–100%	1.67%	N/A
Switzerland (Schmid and Zimmermann 2008)	0–37.3%	37.3–100%	37.3%	N/A



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 ownership<sup>2</sup>—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 ownership<sup>2</sup>’ under

the model of ‘market to book ratio’, both effects of employee stock ownership are not statistically significant.

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 and future 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.

### Sample and Descriptive Statistics

The data for market prices was collected from the Bangkok Post newspaper as at 31 December 2005 and the book value of total liabilities and total assets was also from the corresponding company’s annual report. The sample includes 250 companies 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. Full details of the sample are shown in Table 2.

**Table 2.** Sample Size for Ownership-Performance Model in Thai Company Sample (Model 1–3 in Table 7)

250 companies randomly selected from a population of all Thai companies listed in the SET. Finance-related companies including banking, insurance and trust companies were excluded from the sample	250
<b>Samples for which data is collected</b>	<b>250</b>
Missing data: Incomplete information on the status (executive versus non-executive) of individual directors disclosed resulting in inability to determine managerial ownership	(75)
Missing data: Directors’ status disclosed but insufficient information to determine directors’ shareholdings	(25)
Missing data: Total assets and total liabilities not disclosed resulting in insufficient information to determine Tobin’s Q and Debt Ratio	(2)
Missing data: Market value of equity and market value of preferred stocks not available resulting in insufficient information to determine Tobin’s Q and Firm Size	(3)
Outliers deleted on the basis of standardised residual statistics	(0)
<b>Samples remaining after deletion</b>	<b>145</b>

Summary statistics are given in Table 3. ‘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 3 shows the means of executive director shareholdings in Thailand to be 11.80% with the median of 2.4%.

For market capitalisation, Thai companies averaged \$396.07 million at the mean and \$59.81 million at the median. The median measure of size was significantly lower for market measure 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.

On average, Thai companies are funded 41.8% by debt and 58.2% through equity. These results are comparable with Wiwattanakantang (2001) who produced a similar mean (median) of 0.43 (0.44) for debt-asset ratios based on a sample of 270 non-financial listed companies in 1996 in Thailand.

The study finds that Thai boards of directors, on average, are large in size with the mean of 11 directors. The distribution of ownership is reflected in Table 4, with 23.13% of Thai firms having executive director ownership exceeding 20% of the company’s equity.

**Table 3.** Mean, Median and Quartile Range for Dependent and Independent Variables (Continuous) for the Year 2005

Variables	Min.	Max.	Mean	Median	Percentiles			
					10 <sup>th</sup>	25 <sup>th</sup>	75 <sup>th</sup>	90 <sup>th</sup>
1. Tobin’s Q	0.376	4.289	1.203	1.023	0.700	0.832	1.410	1.915
2. Managerial Ownership	0.000	0.749	0.118	0.024	0.000	0.001	0.172	0.401
3. Market Capitalisation <sup>a</sup>	0.233	21,000	396.070	59.811	11.994	23.326	166.720	541.020
4. Debt Ratio <sup>b</sup>	0.001	1.038	0.418	0.437	0.142	0.255	0.572	0.671
5. Board Size	6	25	10.96	11.00	8.00	9.00	12.00	14.00

<sup>a</sup>Figures are in Australian \$ millions (rate = 0.0332283 as of 31 December 2005)

<sup>b</sup>Debt ratio is defined as total liabilities divided by total assets

**Table 4.** Distribution of Managerial Ownership in Thai Sample

Executive Directors’ Shareholdings of:	Thailand	
	No. of Firms	% of Firms
1. More than 40%	14	9.52
2. More than 30%	22	14.97
3. More than 20%	34	23.13
4. More than 10%	51	34.69

77 Thai firms disclosed incomplete information on the status (executive versus non-executive) of individual directors resulting in inability to determine managerial ownership; 26 Thai firms disclosed directors’ status but provided insufficient information to determine directors’ shareholdings.

### Results and Implications

Tests were conducted to assess the degree of compliance with the underlying assumptions of regression analysis specifically, multicollinearity and normality which were identified as potential threats to the validity of the model. Other diagnostics, including the analysis of outliers and the transformations to correct univariate non-normality are also addressed.

Normal quantile-quantile plots (Q-Q plot) of all continuous variables in the model were examined to test for normality. Significant deviation from

normality was identified in the market capitalisation variable and natural log transformations were undertaken to improve the distribution. Variance Inflation Factors (VIF) and Tolerance were also measured to assess the levels of multicollinearity present in the model. Bowerman and O’Connell (1990) suggested that acceptable limits for these tests are less than 10 for VIF and greater than 0.1 for Tolerance.

All values were within acceptable limits for the model testing the firm performance and ownership variables (Table 5).



**Table 5.** Testing for the multicollinearity in the relationship between firm performance and managerial ownership in Thai company data (reported in Table 6)

Variables	Collinearity Statistics	
	Tolerance	VIF
1. EDOWN	0.862	1.160
2. Firm Size	0.895	1.117
3. Debt Ratio	0.954	1.048
4. Industry	0.987	1.013
5. Board Size	0.868	1.152

Where:

EDOWN	= The proportion of total equity held by executive directors
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 services industry; and 0 otherwise
Board Size	= The number of directors in the boards

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 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, tests are undertaken for quadratic (curvilinear) and cubic—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:

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

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

In order to control for other possible effects on firm performance, 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 major industry group); and board size (defined as the number of directors on the main board).

The results of the three regression models are presented in Tables 6 and 7. 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.

Model 1 accounts for 13.2% of the variation in firm performance, Table 6 and although the coefficient on the variable EDOWN is positive (in line with the convergence-of-interest hypothesis), it is found not to be statistically significant. However, when EDOWN<sup>2</sup> is included (Model 2), adjusted R<sup>2</sup> increases to 15.1% of the variance in performance of firms. Moreover, the EDOWN and EDOWN<sup>2</sup> coefficients become significant. Change statistics (Table 7) confirm that model two represents a significant improvement on Model 1.

**Table 6.** Regression analysis of Tobin's Q on executive directors' shareholdings, firm size, debt ratio, industry, and board size for listed Thai companies in 2005 (p-values in parentheses below coefficients)

Variable <sup>a</sup>	(1)	(2)	(3)
Constant	-2.006*** (0.004)	-2.162*** (0.002)	-2.136*** (0.002)
EDOWN	0.146 (0.649)	1.785** (0.041)	0.521 (0.765)
EDOWN <sup>2</sup>		-3.345** (0.044)	2.615 (0.721)
EDOWN <sup>3</sup>			-6.442 (0.404)
Firm Size	0.147*** (0.000)	0.150*** (0.000)	0.150*** (0.000)
Debt Ratio	0.249 (0.290)	0.274 (0.240)	0.251 (0.287)
Industry	0.215* (0.078)	0.268** (0.030)	0.275** (0.026)
Board Size	-0.010 (0.578)	-0.010 (0.585)	-0.009 (0.602)
R <sup>2</sup>	0.162	0.187	0.191
Adjusted R <sup>2</sup>	0.132	0.151	0.149
F-Statistic	5.382***	5.277***	4.613***
Inflection point(s) <sup>b</sup>		26.68%	

Where: \*\*\*p &lt; 0.01, \*\*p &lt; 0.05, and \*p &lt; 0.10

<sup>a</sup>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 <sup>2</sup>	= The proportion of total equity held by executive directors squared
EDOWN <sup>3</sup>	= 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 services industry; and 0 otherwise
Board Size	= The number of directors in the boards

<sup>a</sup>With other variables assumed constant, Tobin's Q (the dependent variable) is differentiated with respect to the executive directors' shareholdings (EDOWN) and then set equal to zero to solve for the value of EDOWN at the turning point. This would give a maximum inflection point if the second derivative is less than zero.

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

Inclusion of the cubic form of EDOWN does not further improve the model and the explanatory power is reduced. The change statistics (Table 7) confirm that the addition of EDOWN<sup>3</sup> does not contribute to the model's ability to predict the performance of Thai firms.



**Table 7.** Model summary of the regression analysis of Tobin's Q on executive directors' shareholdings, firm size, debt ratio, industry, and board size for listed Thai companies in 2005

Model	R <sup>2</sup>	Adjusted R <sup>2</sup>	Change Statistics				
			R <sup>2</sup> Change	F Change	df1	df2	Sig. F Change
1	0.162	0.132	0.162	5.382	5	139	0.000
2	0.187	0.151	0.024	4.142	1	138	0.044
3	0.191	0.149	0.004	0.701	1	137	0.404

The results of the study (as shown in Column 2 in Table 6) show that the value of Tobin's Q initially rises, and then falls as executive directors continue owning more and more equity shares. The relationship is strongly positive at low levels of executive shareholdings which is consistent with the ownership incentive arguments of Berle and Means (1932) and Jensen and Meckling (1976), and also with the empirical results of previous studies (Morck et al. 1988; McConnell and Servaes 1990; Short and Keasey 1999; de Miguel 2004; Mura 2007; Hu and Zhou 2008; Guedri and Hollandts 2008). However, the ownership-performance relationship turns significantly negative at high levels of executive shareholdings which clearly provide support for the entrenchment hypothesis as argued by Fama and Jensen (1983).

Therefore, as suggested by Stulz (1988), and supported by Schmid and Zimmermann (2008), the results provide clear evidence for the curvilinear (quadratic/inverted U-shaped) form of the executive ownership-firm performance relationship. The effects, consequently, move from alignment to entrenchment as the equity shareholdings by executive directors accumulate. The study reveals that the curve reaches its maximum prior to 50% insider ownership. The value of Thai firms is found to be maximised at the executive directors' shareholdings of 26.68%, as compared to the 53% of ownership found by Hu and Zhou (2008).

The results indicate that firm performance (as measured by Tobin's Q) is related positively to executive director shareholdings in the range 0–26.68%

and inversely related when the ownership exceeds 26.68%. The value of companies increases as managerial shareholdings rises from 0–26.68% possibly as a result of reduced conflict of interest between owners and managers; however, beyond this particular point, the value of firms will be adversely affected as managers become entrenched at higher levels of ownership.

For the sample, 118 (81.38%) companies lie below the turning point of 26.68% and 27 (18.62%) companies lie above it. Among the control variables, firm size and industry enter the regression significantly. The coefficients of firm size, debt ratio and industry are positive, and the coefficient of board size is negative.

As with previous studies, there is significant consistency in the recording of movement from improved performance at low levels of shareholdings to lower performance at higher levels, however the exact turning points remain highly variable dependent on the dataset examined.

Overall, the study provides evidence to support the view that the association between firm performance and executive shareholdings is non-linear in form. The specification shows 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 (refer Table 8).

**Table 8.** Summary of Turning Points for Executive Shareholding and Firm Performance in Thai Companies

Executive share ownership for high performance	X < Lower Limit	Lower Limit < X < Upper Limit	X > Upper Limit
0 - 26.7%	81.38% (118) High Performance	N/A	18.62% (27) Low Performance

Note: X denotes proportion of firms (number of firms in the parentheses)

## Conclusion

The results of this study support both the alignment (convergence of interest) and entrenchment effects and therefore, the existence of a non-linear relationship between firm performance and

managerial ownership in a developing country. There are differences found in such a relationship from those of previous research. The quadratic relationship between performance of firms and managerial ownership is found in the Thai sample to be convergence to entrenchment.

The results show that the value of firm performance initially rises, and then falls as executive directors increase their shareholdings. The relationship is strongly positive at low levels of executive shareholdings whereas the ownership-performance relationship turns significantly negative at high levels of executive shareholding. The effects, consequently, move from alignment to entrenchment as the equity shareholdings of executive directors accumulate. The value of firms is found to be maximised at the executive director shareholding of 26.68%. Among the control variables, firm size and industry enter the regression significantly. The coefficients of firm size, debt ratio and industry (services) are positive whereas the coefficient of board size is negative.

This study suggests that if the executive form of ownership can be controlled and made use of appropriately, corporate performance can be optimised due to convergence of interest factors. On the other hand approximately one-fifth of the Thai firms fall within the entrenchment range and are not maximising performance. 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. This is particularly the case in Thailand where an upper limit exists for performance optimisation.

The study found that a number of Thai companies failed to provide complete information on the status (executive versus non-executive) of individual directors in their annual reports. (see Even when complete disclosure of directors' status was available, a further 25 Thai companies provided insufficient information to determine directors' shareholdings. The results suggest that Thai stock exchange recommendations are not being widely followed and the need for greater regulation to improve disclosure. In addition, strengthening the disclosure rules for director shareholding to include 'beneficial ownership' as a means of strengthening the standard of transparency as is done in developed countries, would improve the level of transparency in the Thai capital market.

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## AN INVESTIGATION INTO THE REASONS FOR THE PRICING DIFFERENCES BETWEEN A WARRANT AND AN OPTION ON THE SAME STOCK IN THE SOUTH AFRICAN DERIVATIVES MARKET

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### Abstract

This study set out to draw a pricing comparison between two similar contracts in the South African derivatives market. These contracts, a normal option and a warrant on the same underlying stock are considered. The research shows that although the two derivatives are the same in all respects, the premiums differ substantially when priced with the Black-Scholes-Merton model. It is clear that pricing has to take place over the same calendar period due to market changes when comparing the instruments. The Black-Scholes-Merton model was the proposed model to be used. However, due to certain limitations the Modified Black model was used as the best suited model. It was shown that warrant contracts always have a higher implied volatility and a higher premium than a comparable normal option per share of the same stock. These results were compared with similar studies conducted in the European markets.

**Keywords:** Black-Scholes-Merton model, "Historic volatility", "Implied volatility", "Premium", "Option", "Modified Black model", "Warrant."

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### Introduction

Internationally, as well as in South Africa, institutional and private investors are faced with trading decisions with volatile stocks in an unpredictable market. Fluctuations in the stock price of a company can be due to changing fundamental factors in the company and the influence of market factors. Over the years more instruments have been made available for trading and investment. The Global financial crisis accentuates the fact that corporate managers require even better risk management skills and tools.

Risk in this context refers to the possible loss due to the change in the stock price of a company. Two similar derivative instruments, namely options and warrants are expected to provide the same price on the same underlying. However, these two similar derivative instruments do not always provide similar prices on the same stock, which is also the case in the South African derivatives market. This is shown in the study conducted by Galai & Schneller (1978:1333). To date, insufficient studies had been conducted in the South African derivatives market, comparing these instruments. In this paper a similar stock of a company will be used as the underlying.

Explaining the reasons for the differences between the prices of these two derivative instruments, may contribute to the more efficient use of these instruments, better risk management decisions and more appropriate investment decisions. Numerous questions arise when option and warrant prices are

compared. This paper is aimed at further clarifying this issue.

The aim of this research is to determine the reasons for the difference between the price of an option on a share and the price of a warrant on the same underlying share in the South African derivatives market. The price of these two instruments should agree as these two instruments are essentially similar in many respects. However, there are differences in the prices of these instruments that need to be explained.

Although these instruments are in a way difficult to compare due to their terms being so different, a comparison will be attempted in this study.

### Option Pricing Theory and Warrant Prices

Option pricing theory has been regarded as one of the most important contributions made to business society. This break-through has been adopted by practitioners worldwide and the end result has been the improvement in the efficiency of financial markets (Kaufman, 1999:77).

Bodie, Kane and Marcus (2007:505) mention that there are at least six factors that should have an effect on the value of a call option on stock, namely: the stock price, the exercise price, the volatility of the stock price, the time to expiration, the interest rate, and the dividend yield of the stock.

Hull (2006:611) provides an illustration of Fisher Black's model which is an extension of the