

THE RELATIONSHIP BETWEEN ENTERPRISE RISK MANAGEMENT (ERM) AND FIRM VALUE: EVIDENCE FROM MALAYSIAN PUBLIC LISTED COMPANIES

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ABSTRACT

Enterprise Risk Management is believed to have an impact of firm value. However empirical evidence on its impact is still considered scarce. The objective of this study is to estimate the relation between ERM and firm value in the Malaysian public listed companies. Tobin's Q is used to measure the firm value. The approach employed is to model firm value (TOBIN'S Q) as a function of Enterprise Risk Management (ERM) and other determinants: size (SIZE); leverage (LEV); profitability (ROA); international diversification (INTDIV); and majority ownership (OWN). The study is based on 2007 for 528 companies. Our findings suggest that the regression model is significant at the 1 percent level with the adjusted R-squared of 0.654. Empirical results report that ERM is positively related to firm value but it is not significant. The results do not support the hypothesis that firms which practice ERM would have a higher Tobin's Q ratio than firms which are not. SIZE and ROA establish a negative and significant relationship with firm value. LEV and companies that do not diversify internationally (INTDIV = 0) have a positive and significant relationship with firm value. Finally OWN is positive but not significantly related to firm value.

Keywords: *Enterprise Risk Management, Firm Value, Public Listed Companies, Malaysia*

1. INTRODUCTION

The word enterprise for Enterprise Risk Management (ERM) in itself clearly shows a different meaning than traditional Risk Management. Enterprise means to integrate or aggregate all types of risks; using integrated tools and techniques to mitigate the risks and to communicate across business lines or level compared to Traditional Risk Management. Meulbroek (2002) suggested that integration refers to both combination of modifying the firm's operations, adjusting its capital structure and employing targeted financial instruments.

It was argued that the term Enterprise Risk Management itself has quite similar meaning with Enterprise-Wide Risk Management (EWRM), Holistic Risk Management (HRM), Corporate Risk Management (CRM), Business Risk Management (BRM), Integrated Risk Management (IRM) and Strategic Risk Management (SRM) (D'Arcy, 2001; Manab et. al., 2006; Liebenberg and Hoyt, 2003; Kleffner et. al., 2003; Hoyt and Liebenberg, 2006).

There are various definitions of Enterprise Risk Management. In the middle of 2004, the Committee of Sponsoring Organization of the Treadway Commission (COSO) released the Enterprise Risk Management Integrated Framework. COSO defined Enterprise Risk Management as a process, affected by an entity's board of directors, management and other personnel, applied in strategy-setting and across the enterprise, designed to

identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.

As for firm value, the basic approach to value the firm comes from discounted cash flow valuation. From discounted cash flow valuation, the value of the firm can be determined by four factors: firstly, the firm is able to generate positive cash flow from investment of assets; secondly, the expected growth rate of its cash flows; thirdly the length of time that firm takes to reach stable growth and finally the cost of capital. From the perspective of Enterprise Risk Management, one of its objectives is to create value for stakeholders. Stakeholders consist of investors, lenders, employees, customers, government and their agencies, suppliers and other trade creditors, the public; board of directors, regulators, stock analysts, rating agencies and business partners (Lam, 2000).

The most popular tool to measure value is Tobin's Q. The founder of the theory is James Tobin in 1969 (Miller, 2000) which is used in traditional economic theory. It is a percentage of firm's market value (i.e. assets) to the replacement cost of the firm's assets. The "q" is an alternative solution for firms to measure performance since it contains a combination of accounting and market information (Lovero, 2000). The most important fact is, it is free from managerial manipulation (Hoyt and Liebenberg, 2006). According to Chung and Pruitt (1994), the approximate Q derived is from the product of a firm's share price and the number of common stock shares outstanding plus firm's preference stock plus total net debt; then divided by the book value of the total assets of the firm.

This theory then was familiarized by proponents such as Lindenberg and Ross in 1981 (known as L-R approach), Lang and Litzenger in 1989, and Chung and Pruitt in 1994. Some literatures mentioned additional approach by Lewellen and Badrinath in 1997 (Sang, 1998). From the complex measurement as introduced by Lindenberg-Ross and Lewellen-Badrinath to the simplest technique of Chung-Pruitt's, each of them shows significant results in determining value (Chung and Pruitt, 1994).

Many researchers used Tobin's Q as a standard proxy to measure value (See Hoyt and Liebenberg, 2008; Abdelgalil, 2004; and Chung et. al., 1998). This mathematical model has been used in determining some economics decisions such as the cross-sectional studies of differentiation between investment and diversification; connection between managerial equity ownership and firm value; relationship for managerial performance and tender offer gains; relationship between investment opportunities and tender offer responses, financing, dividend and issues in compensations policies (Chung and Pruitt, 1994).

Under q theory, the firm or company is said to "create value" if any return of the investment is greater than the cost of investment. Therefore, marginal q is exceeding one. However, if the firm fails to meet the value-maximizing objectives, the marginal q should be less than one. Normally in the equilibrium state, marginal q should always equal to unity (Miller, 2000; Sang, 1998).

Literatures in finance are rich in terms of variables that influence firm value but few have been written about the impact of firm value to ERM. Studies on the impact of ERM on firm value are still considered scarce especially in the Malaysian scenario. Thus, this study aims to fill this gap. The objective of this study is to examine the impact of ERM on firm value which is proxied by Tobin's Q. Other variables such as size, leverage, profitability, international diversification and majority shareholder are included in this study.

2. LITERATURE REVIEW

Berger and Ofek (1995) estimated diversification's effect on firm value and found that diversification reduced value: the segments of diversified firms had lower operating profit-ability than single-line businesses. Evans and Gentry (2004) use Tobin's Q ratio to determine if there is a change in the pre and post performance of companies with stock repurchase programs. Their results did not support the hypothesis that firms repurchasing shares would have higher Tobin's Q ratio than firms not repurchasing shares.

Abdullah et. al. (2002) examined the relationship of managerial holdings with Tobin's Q and R&D expenditures of Japanese firms over the period 1987-1995. The study indicated that Japanese managers engaged in pursuing non-value-maximising objectives when they become well entrenched (ownership levels between 10 and 15 percent) and as ownership rises beyond 15 percent the value maximisation behaviour became evident.

Al-Khouri et. al., (2004) on the other hand, investigated the relationship between firm value and foreign ownership of 46 industrial and service publicly owned Jordanian firms over the period from 1990 to 2000. Their study found that the relationship between firm value and foreign ownership was non-linear. The results suggest a positive relationship between firm value and the 0 to 1 percent foreign ownership level.

Chi (2005) examined the relation between firm value and shareholder rights-based Governance Index and suggested that granting more rights to shareholders could be an effective way to reduce agency costs and enhance firm value. Ou-Yang (2008) investigated the effect of corporate governance index on firm value and the study found that stockholder behaviour is negatively related to Tobin's Q while credit rating and information transparency have significantly positive effects.

Hoyt and Liebenberg (2008) used a Heckman two-stage selection correction model to first explain ERM in terms of its determinants, and then to model its effect on firm value. Their study focussed on US publicly-traded insurers. Their results revealed that ERM usage was positively related to firm size, international diversification, and institutional ownership. The results on the second stage found a positive relation between firm value and the use of ERM.

2.1 Conceptual Framework

This study proposes a conceptual framework of the relationship between firm value and ERM, size, leverage, profitability, international diversification and majority ownership. This is illustrated in **Figure 1**.

3. DATA

In this study we seek to examine the impact of ERM on firm value in the Malaysian public listed companies. This study uses financial data of 528 firms for 2007. Data is obtained from OSIRIS database.

The samples of companies that we select are categorized under business and economics segment and obtained from Osiris Database. This database covers all public listed companies worldwide including Malaysian companies. This data is provided by Bureau van Dijk. It is a comprehensive database of listed companies, bank and insurance companies around the world. It contains summary information, detailed financial information, ratings, scanned/digitalized report, market research and recent news of the companies.

Table 1 presents the breakdown of the sample used in this analysis, sorted by industry. It can be seen that Industrial Products provides us with the largest number of observations, followed by Trading/Services. Properties and Consumer Products are third and fourth largest sample. Companies in the mining industry are very small indeed. In terms of percentage, we find that Industrial Product represents about 26.48 percent, followed by Trading/Services 24.22 percent, Properties 14.98 percent, Consumer Products 14.63 percent, Constructions 7.49 percent, Plantations 6.62 percent, Technology 3.14 percent, Infrastructure Project 1.39 percent, Hotels 0.87 percent, and Mining Industry 0.17 percent.

4. VARIABLES UNDER INVESTIGATION

To investigate the relationship between firm value and ERM, the following variables are employed:

4.1 Dependent Variable

This study used the approximation of Q-Ratio as a proxy of firm value. For the purpose of this study, approximate Q which is introduced by Chung and Pruitt (1994) is used and derived from the formulas as follows:

$$\text{Approximate Q} = \frac{(\text{MVE} + \text{PS} + \text{DEBT})}{\text{TA}}$$

Where:

MVE	:	The product of a firm's share price and the number of common stock shares outstanding
PS	:	The liquidating value of the firm's outstanding preferred stock
DEBT	:	The value of the firm's short-term liabilities net of its short-term assets, PLUS the book value of the firm's long-term debt
TA	:	The book value of the total assets of the firm

4.2 Independent Variables

4.2.1 Enterprise Risk Management

As suggested by Pagach and Warr (2007), Enterprise Risk Management creates firm value if it will reduce negative net cash flows and firms will not suffer losses while selecting a single project. Studies from Hoyt and Liebenberg (2006, 2008) found that Enterprise Risk Management was positive and significant at 1 percent level. The empirical results support that Enterprise Risk Management would increase firm's value by 3.6% (Hoyt and Liebenberg, 2006) and 17% (Hoyt and Liebenberg, 2008). The study suggests that, if the company practices Enterprise Risk Management, the value of the company is 3.6 percent (to 17 percent) higher than company

which do not practice Enterprise Risk Management. Therefore, it is argued that Enterprise Risk Management is one of the factors that can add value to a firm.

Therefore this paper hypothesizes:

H1: There is a positive relationship between enterprise risk management and firm value

4.2.2 Firm Size

As argued by Tongli et. al., (2005), size is related to firm performance. It is because larger firms can increase their current size very quickly due to past performance, and this relates to the firm value. For example, at year one, if the company could extend its size from 1 million up to 2.5 million in the next year, it means that the company performance is good because the increment is 1.5 million. At the same time, this shows that the company has successfully creates value for its shareholders at 1.5 million. From shareholders perspectives, this is a good result and will reflect on their dividends payout because increment means they could invest more. This indicates that value creation is created by company to shareholders.

Therefore:

H2: There is a positive relationship between size and firm value

4.2.3 Leverage

In the real business, it is believed that most companies use debt to finance operations. The sources to finance operations can be created via options, futures or other financial instruments. By borrowing, a company actually increases its leverage because the company grabs the opportunity to invest business operations without increasing its equity. As a result, it creates an opportunity for company to create value for its stakeholders if it is able to generate profits. Further, increasing leverage actually creates tax saving because a firm could deduct interest payments against its corporate income taxes. As postulated by Aggrawal et.al., (2008), leverage can increase firm value because debt forces the managers to pay out funds that might otherwise have been invested in negative net present value project. Sharma (2006) postulated that an unlevered firm used only equity capital, while levered firm used "judicious mix of equity and various forms of liabilities", and firms need to manage the optimal capital structure carefully. It will helps firm to reduce the overall cost of capital and increases the firm's value.

Therefore, we hypothesize the following:

H3: There is a positive relationship between leverage and firm value

4.2.4 Profitability

In finance, profitability is the ability of the firm to generate earning. It also refers to the ability of a company to make a profit after any costs, overheads and other expenses. It measures how efficient the firm is in using its assets and how efficient the operations are managed. Profitability can be derived from three most accepted financial ratios. Firstly, by using profit margin i.e. net income divided by sales. Secondly, by using return on equity i.e. net income divided by total equity. Thirdly, by return on assets i.e. net income divided by total assets (Ross et.al. 2009). These ratios show how companies are able to generate revenue from the investment of assets. Profitability measures are important for firm. It is because increase in profits could influence rising in market price. Furthermore, on the other side, if a firm shows good return, this will attract more investments. Another example is for creditors, this information is material because profits are a sign of funds for debt coverage. As argued by Naccur and Goaid (2002) based on the study on the Tunisian stock exchange, profitability factor is one of the factor that creates future value to attract new investors. When firm shows profitable earnings, it creates value for shareholders (Varaiya et. al., 1987). Study by Mohamad and Saad (2010) on 172 selected listed companies in Bursa Malaysia found that Return on Asset (ROA) as a proxy of profitability was significant at 1 percent to firm value (as proxied by Tobin's Q).

Therefore, we hypothesize that:

H4: There is a positive relationship between profitability and firm value

4.2.5 International Diversification

Diversification is a part of Modern Portfolio Theory as claimed by Markowitz in 1950s. According to Lam (2003), diversification is the concept of lowering the total risk of an enterprise by spreading risk among many

distinct projects: the total risk produced by a collection of diverse risk is less than the sum of those risks considered in isolation. Even the purpose is to reduce risk, but at the same time it creates return on the other side. Guo (2007) suggested that firms with lower profitability and fewer growth opportunities are more likely to increase their diversification level. In addition, the study suggested that firms tend to increase their diversification level due to lower capital expenditure ratio. Therefore, firms can have a bigger internal capital market which helps firm to reduce the underinvestment problem. Study from Hoyt and Liebenberg (2006, 2008) found that international diversification was positive and significant at 1 percent level. This results show that diversification may increase firm value instead of to reduce unsystematic risks.

Therefore, we hypothesize the following:

H5: There is a positive relationship between international diversification and firm value

4.2.6 Majority Ownership

A well explanation of ownership was made by Thomsen and Pedersen (1996). There are two dimensions which at least described the meaning of ownership. First is the identity and concentration ownership. Second is the legal status of the contract which regulates the ownership. The study divided ownership into two categories: firstly minority ownership (less than 50 percent) and majority ownership (more than 50 percent). Cooperative, dispersed ownership and dominant ownership are under minority ownership, while for minority ownership, there are three categories, namely: personal/family ownership; foreign ownership; and government ownership. Pedersen and Thomsen (1997) postulated that 'view of institutional' has emerged during the time of study. In the view of institutional, it regards ownership structure as highly dependent on regulations and the prevailing institutions, even in market economies. Different countries have different legislation, and this will affect financial system and companies' ownership structure.

The study by Hoyt and Liebenberg (2006) found institutional ownership was positive and significant at 1 percent level. This result showed that institutional ownership could influence any decision by management of the companies. Chen et. al., (2008) found that institutional ownership was an important variable to increase firm value for New Zealand's public listed companies. The study used Tobin's Q and return on equity as indicators to measure firm value. The study also chose four variables as controlled variables: firm size, financial leverage, market risk (beta) and firm specific risk.

Dwivedi and Jain (2005) argued that the difference between the country's financial system and legal provisions regarding shareholders rights protection plays important role either in moderating or influencing the effect of board size and ownership. These factors are the causes for inconsistency results across the countries, which will also affect the results of firm value. The study which focused on Indian firms showed that higher proportion of foreign shareholding is associated with increase in market value of the firm, while the Indian institutional shareholders' association is not significant. The study also found weak positive association between board size and firm value.

We hypothesize that:

H6: There is a positive relationship between majority ownership and firm value

5. MODEL SPECIFICATION

To capture the effects of firm value, we use the following regression:

$$\text{TOBIN'S } Q_i = \beta_0 + \beta_1 \text{ERM}_i + \beta_2 \text{SIZE}_i + \beta_3 \text{LEV}_i + \beta_4 \text{ROA}_i + \beta_5 \text{INTDIV}_i + \beta_6 \text{OWN}_i + \varepsilon_i$$

Where:

TOBIN'S Q_i	=	The dependent variable for the i th firm, proxy for firm value
ERM_i	=	Enterprise Risk Management, dummy variable 1 = practice ERM and 0 otherwise
SIZE_i	=	Total Assets (in log), Loans, investment and other earning assets
LEV_i	=	Leverage (Total liabilities divided by the market value of equity)
ROA_i	=	Profitability (Net income divided by total assets)
INTDIV_i	=	International Diversification (Dummy variable 1 = company involved in International diversification and 0 otherwise)
OWN_i	=	Majority Ownership (Percentage of 30 largest shareholders)

ε_i = error term for *i*th firm.

6. EMPIRICAL RESULTS

6.1 Summary Statistics

Descriptive statistics containing values of mean and standard deviations are reported in **Table 2**. The dependent variable is Tobin's Q while the rest are independent variables.

The values of Pearson Correlations Coefficients are reported in **Table 3**. There is an apparent weak relationship between dependent variable and ERM. Firm value is not correlated with ERM and companies that are not diversified internationally (International Diversification = 0). This justifies that ERM has no impact on firm value.

6.2 OLS Regression Analysis

The hypothesized relationships between firm value and ERM are further analysed by the ordinary least square regression analysis. **Table 4** reports the regression results. The results show that the problem of multicollinearity does not exist. This is confirmed by the values of variance inflationary factor (VIF) ranging from 1.026 to 1.366 which are less than 10. Belsley et. al., (1980) stated that VIF should not exceed than 10. The probability F-statistic is 0.0001 which represents that the model is good fitted. The value of adjusted R-square represents that 65 percent change in the dependent variable can be observed with the variables under study while the rest i.e. 35 percent is due to those factors that are not included in the study.

H1: There is a positive relationship between enterprise risk management and firm value

The results in **Table 4** show that ERM is found to be positive but not significant with firm value. It suggests to us that the practice of Enterprise Risk Management in Malaysia does not make any impact on firm value. This result contradicts to that found by Hoyt and Liebenberg (2006, 2008). Thus H1 is rejected.

H2: There is a positive relationship between size and firm value

The coefficient for SIZE is negative but significant with firm value at 1 percent level. Previous study postulated that big companies should increase firm value (for example, Hoyt and Liebenberg, 2008). Based on this result, it suggests two possibilities. First, there is no added value effect for big companies to increase their assets due to the Theory of Diminishing Return. According to this theory, it happens when one factor of production remains constant while other productions are increased. It means that, if one factor is being held constant, the increment of other factors yields less benefit (Reinert, 1994). Second, small company which produces more profit is actually creating more value because it will attract stakeholders to invest into the company. Thus H2 is rejected.

H3: There is a positive relationship between leverage and firm value

The coefficient for LEV is positive and significant at 1 percent. This means that there is a relationship between Leverage and firm value, as argued by previous studies (Sharma, 2006 and Rayan 2008). Proponents of this belief suggest that a high leverage will increase firm value. Furthermore, as argued by Highland Global (2008), "the use of leverage in the capital structure serves to lower the company's weighted average cost of capital". The result is, as the proportion of debt increases, the value of firm also increases. Thus H3 is accepted.

H4: There is a positive relationship between profitability and firm value

The Return on Assets (ROA) as a proxy of profitability is negative and significant at 1 percent. It shows there is an inverse relationship between profitability and firm value. As suggested by theory of Tobin's Q, if a company is able to produce net income, the company creates value. However, if we look at the results, it contradicts with general theory of Tobin's Q. One of the reasons is that if the proportion of capital structure of the company is more on debt such as bond, the obligation for company to pay interest is compulsory; hence it will affect the net profit of the company. In addition, profitability is not static from year to year. Thus, H4 is rejected.

H5: There is a positive relationship between international diversification and firm value

The coefficient for INTDIV (Dummy = 0) is positive and significant at 1 percent. The main benefit of diversification is to reduce unsystematic risk since all investment normally involves some degree of risk. This contradicts to that found by Steiner (1996). However, it becomes interesting because the study finds that companies which do not diversify its business outside of Malaysia are creating firm value than companies which

diversify its business outside of the country. One possible reason is economic situation in Malaysia is still strong and healthy. Thus H5 is rejected.

H6: There is a positive relationship between majority ownership and firm value

The coefficient for OWN is positive but not significant. It means there is no relationship between majority ownership and firm value. It means that, in terms of pressure from ownership in Malaysian companies, it could not be considered as an influential factor to increase firm value. Therefore, the results contradicted with previous study for example, Steiner (1996), Hoyt and Liebenberg, 2006 and Chen et. al., 2008. Thus H6 is rejected.

7. CONCLUSIONS

This study aimed to examine the firm's level factors which influence the firm value in Malaysian public listed companies for the period 2007. This study has employed firm value proxied by Tobin's Q as dependent variable to evaluate the impact of ERM on firm value and other factors. The study used ordinary least square (OLS) regression analysis to analyse the data.

The firm value regression results suggest positive but not significant relationship between firm value and ERM. This finding does not support the contention that ERM enhances firm value. Hoyt and Leinberg (2006, 2008) found a positive and significant relationship. The results also indicate a significantly negative relationship between firm value, size and profitability. The leverage and firm that do not diversify internationally (INTDIV = 0) had a positive and significant relationship with firm value. Finally majority ownership is positive but not significantly related to firm value.

This result contradicts the previous study that stressed on the importance and benefits of Enterprise Risk Management to the value of the firm. It shows that the practice of Enterprise Risk Management is still at an infancy stage for Malaysian public listed companies. We can conclude that the knowledge on the benefits of practicing Enterprise Risk Management for companies in Malaysia is still in limited.

This study is without its limitations. As this study focuses on only one year, we suggest that future research should include more years in the sample.

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Figure 1: Conceptual Framework

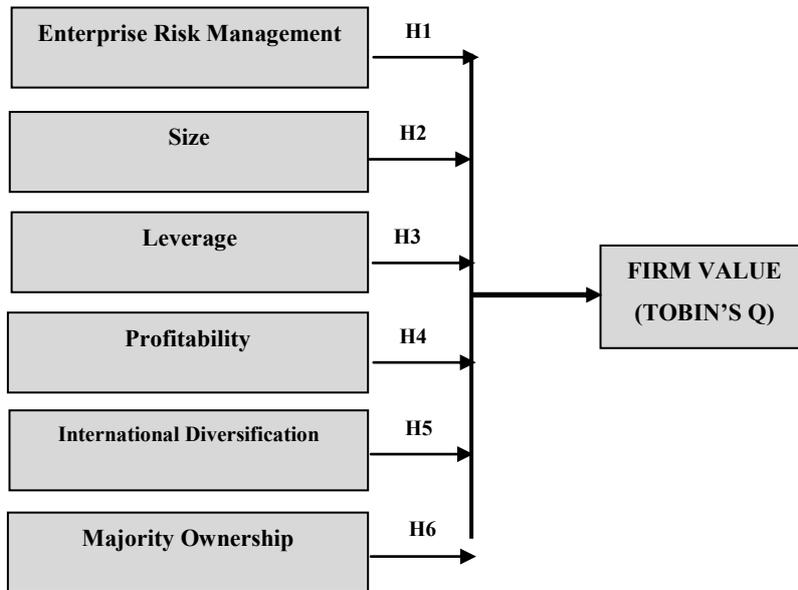


Table 1: Sample companies

Types of Companies	Sample	ERM non-		ID	No ID
		ERM user	user		
Consumer Products	79	24	55	47	32
Industrial Products	139	47	92	79	60
Constructions	40	12	28	20	20
Trading/Services	124	40	84	56	68
Infrastructure Project	7	3	4	1	6
Hotels	4	1	3	0	4
Properties	79	21	58	20	59
Plantations	38	6	32	10	28
Mining	1	0	1	1	0
Technology	17	3	14	14	3
Total	528	157	371	248	280
Total (in %)	100	29.7	70.3	46.9	53.0

Note: ERM = Enterprise Risk Management, ID = International Diversification No ID = No International Diversification

Source: OSIRIS database

Table 2: Summary Statistics

Variables	Mean	Std. Deviation
Firm Value (TOBIN's Q)	0.748	0.211
Enterprise Risk Management (ERM)	0.297	0.458
Size (SIZE)	13.27	1.119
Leverage (LEV)	0.435	0.213
Profitability (ROA)	7.001	8.146
International Diversification (INTDIV)	0.451	0.498
Majority Ownership (OWN)	64.602	408.25

Table 3: Correlation Matrix

	Tobins Q	ERM	SIZE	LEV	ROA	INTDIV (0)	OWN
Tobins Q	1.000						
ERM	0.011	1.000					
SIZE	-0.112**	0.100	1.000				
LEV	0.653**	0.059**	0.337**	1.000			
ROA	-0.417**	-0.004	0.076	-0.294	1.000		
INTDIV (0)	-0.057	0.102	0.068	0.054	0.010	1.000	
OWN	-0.237**	0.091*	0.353**	-0.034	0.214	-0.068	1.000

Note: * is significant at the 0.05 level, ** is significant at the 0.01 level

Table 4: Coefficients for Regression Analysis

Independent Variables	Beta	Std. Error	t	Sig.	Collinearity Statistics
					VIF
Intercept	1.480	0.064	23.178	0.0001	
ERM	-0.015	0.012	-1.267	0.206	1.031
SIZE	-0.076	0.005	-14.477	0.0001	1.366
LEV	0.748	0.029	25.913	0.0001	1.294
ROA	-0.004	0.001	-5.588	0.0001	1.166
INTDIV (0)	0.031	0.011	2.782	0.006	1.026
OWN	0.000	0.000	-1.185	0.236	1.222
R-squared	0.658				
Adjusted R-squared	0.654		F-Statistic		167.177
Durbin-Watson stat.	2.014		Prob (F-statistic)		0.0001