Cost of Capital- The Effect to Firm Value and Profitability Performance in Malaysia

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Abstract

Firm's cost of capital is determined in the capital markets and is closely related to the degree of risk associated with new investments, existing assets, and the firm's capital structure. It is an overall return that a corporation must earn on its accessible assets and business operations in order to augment or preserve the value of its current stock. Thus a careful approximation of a firm's specific financing and weighted-average cost of capital (WACC) is essential for a good financial management. Thus study highlights the effect of cost of capital towards firms' value and profitability for a sample of 415 listed companies in main market Bursa Malaysia for 6 years basis from 2005 to 2010. The result of the study shows significant relationships exist between cost of capital with firm value and profitability.

Keywords: Weighted-average Cost of Capital, Tobin Q, Return on Asset and Z-Score

Introduction

The raison d'être of the corporate financial management is to maximize the shareholders' value by maximizing the firm value persuades from effective and accurate financing decisions making. The firm's source of financing either the external or internal funds compositions roused the firm's mixture of capital structure's decision. The finance theory dictate that the used of capital by a firm required an opportunity cost to the fund's provider as funds are diverted from earning a return on other investment that provided the same risk level. Since the fund's provider has a lot of alternatives in the investment decisions in the financial market, they have to be compensating with a suitable return as benchmark for the fund's opportunity cost. Thus in finance theory this benchmarks is widely known

as cost of capital and unless a firm can gain in excess of its cost of capital, it will not add value to its investors' wealth.

As according to Khadka (2006), the cost of capital signifies what a firm has to pay for the capital used to finance new investments. In auxiliary, a careful approximation of a firm's specific capital structure and cost of capital is essential in a specific investment decisions which lead to a discrepancy between accretion and erosion of shareholder value. In view of that, the analysis on the cost of capital arise a common focus in managerial accounting and financial management and is treated essentially in most textbooks on corporate finance, financial management, and other similar area (i.e. Gitman, 1994; Brigham and Gapenski, 1996). However the capital structure puzzle in relations with firm value have been a considerable debates from both the finance managers and academicians for the last 50 years, predominantly since the publication of the articles by Franco Modigliani and Merton Miller in 1958. Hence, this paper makes an attempt to analyze some dimension in the vicinity of capital structure from the viewpoints of cost of capital and its influence towards firm value and profitability of publicly traded Malaysian firms over 2005 to 2010 periods. Which eventually, so far have not been thoroughly explore but these areas tend to instigate a considerable impact in the manner the literature on capital structure from Malaysia perspective is understood.

Literature Review

Modigliani and Miller (1958) suggest that the overall cost of capital of the firms is computed for the market value as the weighted average of the cost of each of the components of capitals used by the firms. Also known as Weighted-Average Cost of Capital (WACC), it's widely used in practice to assess a firm's cost of capital. The Modigliani–Miller theorem Proposition I often called the capital structure irrelevance principle (of Franco Modigliani, Merton Miller.1958) (MM hereafter) forms the basis for modern thinking on capital structure theory. The basic theorem states that, under a certain market price process (the classical random walk), in the absence of taxes, bankruptcy costs, agency costs, and asymmetric information, and in an efficient market, advocated that the firm value and weighted average cost of capital (WACC) is unaffected by the financial structure of the firm. Modigliani and Miller (1963) later modified their original MM's model and considered the tax deductibility of interest (tax shields effect) thus demonstrate that the market value of a firm is an increasing function of leverage with the existence of corporate tax that allow the deductibility of interest payments. Later supported by Brigham and Gapenski (1996) which argue that an optimal capital structure can be attained if there exist a tax sheltering benefits, provided an increase in debt level is equal to the bankruptcy costs. They suggest that managers of the firm should be able to identify when the optimal capital structure is attained and try to maintain it at that level. This is the point at which the financing costs and the cost of capital (WACC) are minimized, thereby increasing firm value and performance.

Tashfeen and Liton (2010) estimate the WACC for twenty four commercial banks that are listed in the Dhaka Stock Exchange, Bangladesh between January, 2006 and December, 2008. Using correlation and regression analyses, they find a strong negative correlation is emerging between the cost of capital of commercial banks and their respective market returns. Their results also show that for the majority of the banks that are listed in Dhaka Stock Exchange the variation in the returns on stocks can be strongly explained by the variation of their respective cost of capital by the end of *2008.* Pástor, Sinha, and Swaminathan (2008) argue that the implied cost of capital, computed using earnings forecasts is useful in capturing time variation in expected stock returns. Their study show

that cost of capital theoretically is perfectly correlated with the conditional expected stock return under plausible conditions and is helpful in detecting an intertemporal risk–return relation, even when earnings forecasts are poor. Swanson, (2006) examines the relation between the investor determined cost of capital and the firm's investment from return on assets both in total and decomposed into operating and financial components. This study's provide evidence of a significant positive association between the return on total assets and the firm's cost of capital. When total asset returns are decomposed into operating and financial asset returns, both the operating and financial assets have a positive significant relation with the cost of capital. His study also found a significant leverage interaction impact upon relation of the return on assets and WACC; and from the operating/financial asset mix upon the relation between WACC and the return on firm assets. Syed Waqar Hussain et al. (2012) found a negative relationship between return on equity on WACC. Their paper has applied the WACC vis-à-vis risk premium model, Gorden model, FAMA and French to Cement Industry of Pakistan. The results have quantified the proportionate impact of cost of capital on return on equity in Cement industry under the assumption that scale of operation and managerial efficiency in all the firms operating in this industry remains the same.

The trade-off theory of financial leverage that first formulated by Krause and Litzenberger in 1973 indicate that the increase in debt level will increase the cost of bankruptcy, financial distress and agency, hence decrease the value of the company. As Miller (1977) indicate that if financial distress costs are included in the valuation of the firm, then, the probability of bankruptcy increases as the amount of debt increases thus with small increases in debt, the WACC decreases and the value of the firm increases. The bankruptcy costs and financing decision also explore by Warner (1977) and Altman (1984), they proposed that direct and indirect bankruptcy costs are incurred when debt financing is used, therefore, Bankruptcy costs may be one of the constraints affecting the amount of financing decision.

Data and Methodology
Variable and Data selection
This study focus on securities that is listed in Bursa Malaysia Main market. As at May 2012, a total of 930 of securities are listed on Bursa Malaysia and 517 samples had been selected using stratified random sampling from 7 different sectors. Due to availability of information only 415 numbers of listed companies are selected for 6 years basis from year 2005 to 2010 with 2490 total observation. The data are gathered from www.bursamalaysia.com, Bloomberg and Thompson Data Stream. This study utilized data (independent variables) items of cost of capital as (WACC), leverage (DT), distress risk (SCORE) and the control variable are Size (LnTotal Asset) and Gross Domestic Product (GDP). The key dependent variables for this research to represent the firm value and profitability are measures Tobin Q and by Return on Asset (ROA) respectively.

Table 1. The proxies for dependent and explanatory variables

Proxies for Dependent and Explanatory Variables	
Variables	*Proxies*
Dependent (Risk & Return)	• *Return on Asset (ROA)* • *Firm Value (TobinQ)*
Explanatory	• *Weighted Cost of capital (WACC)* • *Distress Risks (SCORE)* • *total debt ratio (TDR)* • *lnTotal Asset (SIZE)* • *Growth Domestic Product (GDP)*

Independents variable (WACC)

Adopted from Modigliani & Miller (1958, 1963), the cost of capital WACC of a firm after corporate taxes (but before personal taxes) is given by the formula as below:

$$WACC = \frac{D}{V}(1 - T_C) \times r_d + \frac{E}{V} \times r_e \tag{1}$$

Where:
D is the market value of debt
Tc is the corporate tax rate
V is the market value of the firm
r_d is the cost of debt
E is the market value of equity
r_e is the cost of equity

The market value of the debt (D) is equal to the number of bonds outstanding multiplied by the current market price of the bonds. The total market value of the common stock (E) is equal to the current market price of one share of stock multiplied by the number of shares outstanding. The total market value of the firm (V) will be found by adding the total market value of bonds and the total market value of common equity. The cost of debt is the yield to maturity of the current price of the bonds relative to the expected future coupon payments and the face value of the bond at maturity. For this study, the data for WACC were extracted from Bloomberg's database.

For the Laverage variables we will follow Mustafa, Ismail and Mina (2011), using total debt ratio as this is viewed as a proxy for what is left for shareholders in the case of liquidation. The formula is as follows.

$$Total\ debt\ ratio\,(DR) = TDR_i = \frac{Long\ Term\ Debt + Current\ Liability}{Total\ Assets} \tag{2}$$

The variable for firm risk is representing by the probability of distress risk which is the Z-score value. It was based on the works of Altman (1983) in which he used the discriminate analysis technique to calculate bankruptcy ratio. This ratio which uses the Z value to represent overall index

of corporate fiscal health, is used mostly by stockholders to determine if the company is a good investment. The formula for the ratio is:

$$\text{Altman Z-score} = 0.012X_1 - 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5, \tag{3}$$

Where:

X_1 = Working capital/Total Assets),

X_2 = (Retained Earnings/Total Assets),

X_3 = (EBIT/Total Assets),

X_4 = (market Value of Equity/Book value of Total Liabilities),

X_5 = (Sales/Total Assets).

The range of the Z-value for most corporations is between -4 and +8. The score was range into three categories. Low probability of distress firms have Z values above 2.99 and was rank as 3, while those with high probability of distress with Z value below 1.81 was rank as 1. Firm in the middle are indeterminate that could go either way and was rank as 2.

Dependent Variables

For the independents variable, Tobin Q was used as a proxy for the firm's value from an investor's perspective. The higher the q value, q > 1.00 indicating a better investment opportunity (Lang, Stulz & Walkling, 1989) with higher growth potential (Brainard & Tobin 1968; Tobin, 1969). The model equation as per below:

$$\text{TobinQ (TQ)} = \frac{\text{Market Value of Equity} + \text{Book Value of Liability}}{\text{Total Assets}} \tag{4}$$

Return on assets (ROA) was used as the proxy for firm profitability since it was one of the preeminent measurements for corporate performance. The measurement as per below and the increased of ROA indicate an industrious financial performance of relative business (Siddiqui, 2008).

$$\text{Return on Asset} = \text{ROA}_i = \frac{\text{Net Profit}}{\text{Total Assets}} \tag{5}$$

Regression Model and Equation

Next, two alternate hypotheses had been developed to find the significant association between WACC with the dependent variable.

Hypothesis H1: There is an association between costs of capital with Tobin Q.
Hypothesis H2: There is an association between costs of capital with ROA.

The relationship between the cost of capital and dependent variables was estimated using the following regression equations:

$$TQ_i = \alpha + \beta_1 (WACC_1) + \beta_2 (SCORE_1) + \beta_3 (DR_3) + \beta_4 (SIZE_4) + \beta_5 (GDP_5) + \varepsilon \qquad (6)$$

$$ROA_i = \alpha + \beta_1 (WACC_1) + \beta_2 (SCORE_1) + \beta_3 (DR_3) + \beta_4 (SIZE_4) + \beta_5 (GDP_5) + \varepsilon \qquad (7)$$

Where:

α = the constant term,
β = the slope or coefficient estimates of the explanatory variables,
ε_i = the standard error of the i th company,
R_iOA = the return on asset of the ith company's of the i th year,
TQ_i = the market value of the ith company's of the i th year,
$WACC_i$ = the Cost of Capital of the ith company's of the i th year,
$SCORE_i$ = the distress risk of the ith company's of the i th year,
TDR_i = the total debt ratio of the ith company's of the i th year,
$SIZE_i$ = the size of the i th company's of the i th year,
GDP_i = the GDP of the i th year.

Findings
Table 2. Correlations analysis

	ROA	TQ	WACC	SCORE	DR	SIZE	GDP
ROA	1	.423**	.169**	.510**	-.337**	.146**	.016
		.000	.000	.000	.000	.000	.419
TQ		1	.160**	.303**	.032	.190**	.065**
	.000		.000	.000	.110	.000	.001
WACC	.169**	.160**	1	.260**	-.352**	.016	.133**
	.000	.000		.000	.000	.430	.000
SCORE	.510**	.303**	.260**	1	-.551**	.003	.017
	.000	.000	.000		.000	.863	.406
DR	-.337**	.032	-.352**	-.551**	1	.183**	-.009
	.000	.110	.000	.000		.000	.664
SIZE	.146**	.190**	.016	.003	.183**	1	-.029
	.000	.000	.430	.863	.000		.147
GDP	.016	.065**	.133**	.017	-.009	-.029	1
	.419	.001	.000	.406	.664	.147	

*** Correlation is significant at the 0.01 level (2-tailed).*

The correlations between the variables are reported in Table I. Results indicate no
multicollinearity problems, as the correlations are relatively low. As according to Gujarati (1995),
multicollinearity problems exist when the correlations value exceeded 0.80. The correlations results
for ROA indicate positive coefficient with WACC (+0.169), SCORE (+0.510), Size (+0.146) and LnGDP
(+0.016) all at 1% significant level but negative insignificant with DTR (-0.337). As for TQ, results

demonstrate positive coefficient with WACC (+0.160), SCORE (+0.303), Size (+0.190) and LnGDP (+0.065) at 1% level, whilst, positive insignificant coefficient with DTR (0.032). Overall the correlations results indicates both alternate hypotheses 1, and 2 can be accepted implying a significant correlations exist between independent variables components with market valuation.

Table 3. Dedependent variable and cost of capital measured by WACC

Dependent Variable	Eq. 6 TQ		Eq. 7 ROA	
Independent Variable	t	P	t	P
WACC	7.343***	.000	.388	.698
SCORE	19.498***	.000	21.520***	.000
DT	12.725***	.000	-5.693***	.000
SIZE	7.224***	.000	9.617***	.000
GDP	2.463***	.014	.686	.493
R	0.436		0.540	
R Square	0.190		0.292	
F-Value	116.709*** 0.000		204.710*** 0.000	
Durbin-Watson	1.961		2.039	

To test the effect of independent variables on cost of capital, a regression analysis were performed using 2490 firm-years observations and the results is presented in table II. The results for the equation 1 for firm value (TQ) depicted positive coefficient and significant for WACC however positively insignificant with ROA. This indicate that any increase in TQ can be explained by an increased in WACC however any changes in ROA cannot be explained by any changes in WACC. We could say that positive market valuation of the firms can be obtained by offering a higher WACC. The results for ROA is contradict towards study's by Swanson (2006) which provide evidence of a significant positive association between the return on total assets and the firm's cost of capital. The regression results for SCORE indicate a 1% confidence having positive association with TQ and ROA indicating any increase in TQ and ROA can be explained by an increased in SCORE thus support hypotheses 1 and 2.As for this study is concerned, the higher the score, the lower the probability of distress firms indicating the better the firm financial quality (Altman, 1968) and consequently improved the value of the firms. As depicted by the results of DT, coefficient is positive and significant for the leverage variable at 1% significant level with TQ whilst negatively significant with ROA at 1% level. This shows that any changes in TQ and ROA can be explained by the changes in DR. The results imply that an increase or decrease of debt level will have an influence in market valuation and firm profitability which support the argument of Modigliani and Miller (1963) implying that the firm's value rises with leverage in the presents of corporate taxes. As the results for ROA with leverage is confirms is corroborate with Huang and Song (2006) and Chakraborty (2010) which found negative relations between leverage and performance. Results for control variable i.e. Size and GDP in relations with the market valuations in Malaysia is concerned both disclosed a positive association with TQ at 1% significant level. Whereas, for the ROA indicate 1% confidence level having a positive

significant association with Size however positive insignificant association with GDP. Given the positive and significant approximation for firm size, results exemplify that larger firms are more profitable with an enhancement in firm value as compared to smaller firms. This study forms an evidence for the listed companies in Malaysia as an indicator that larger firm's has the ability in exploiting the economics of scale by obtaining access capital at lower costs than smaller firms.

Conclusions

In this paper we make an empirical research on the effects of cost of capital using the weighted-average cost of capital (WACC) approach with firm value and profitability from the viewpoints of listed companies in Bursa Malaysia. The study employed two model specifications in order to test the postulated hypotheses, using cost of capital measure of WACC along with other independent variables for 415 listed companies for the period of 2005 until 2010. On the basis of findings for this research, it can be conclude that there are significant relations between cost of capital with firm's value and profitability for listed companies in Malaysia which disclose both positive and negative association.

The regression results support hypotheses 1 and 2, as depicted by table II, the F statistics is substantiated at the 1% significant level for Equation 1, TQ (F=116.709) and Equation 2, ROA (204.710) implying the null hypotheses that the regressions coefficients are all zeros can be rejected at 1% level of significant. Though, the R squared (0.190) and (0.292) statistically shows weak relationships for the hypotheses 1 and hypotheses 2 respectively, however, the estimated regressions is efficient for predictions and hypotheses 1 and hypotheses 2 can be accepted implying that there are an associations between cost of capital with firm value and return of listed companies in Malaysia. In conclusions, although the alternate hypotheses are support by the analysis, however the results of present study are in contradiction to some earlier studies on the issues. Nevertheless, we hope that the result can contribute to the body of knowledge by identifying the important factors that could influence firm's value and return. It was recommended that the study is further improved with more sample size, different variables internal and external variable which could provide a strong relationship between the variables and help to uncover the better firm's value and return performance in Malaysia perspectives. Thus this study is left for future to be further explored.

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