Capital Structure Determinants of Firms at Bursa Malaysia

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Abstract

This paper attempts to investigate the effect of total assets, fixed assets, current assets, sales, return on equity and earning per share (firm's specific factors) on capital structure of listed firms at Bursa Malaysia. The Modigliani-Miller Theory, Trade-off Theory and Pecking Order Theory are put into test in this study. The study is comprehensive indeed as it covers all sectors in Bursa Malaysia (both financial and non-financial sectors). The investigation is carried out on 558 listed firms from all sectors of Bursa Malaysia main market over an observed period of twelve years from 2005 to 2016. The methodology is based on static panel data model. Pooled OLS is applied to provide the base-line analysis. Debt Equity ratio is taken as a dependent variable, representing the firm's capital structure. The empirical results show that total assets, current assets, sales and earnings per share are relevant in explaining firm's capital structure.

Keywords: Capital Structure Theories, Static Model, Modigliani-Miller Theory, Panel Data Model,Pooled OLS, Bursa Malaysia.

1. Introduction

The aim of this study is to investigate the specific factors which influence the capital structure decision in Malaysian listed firms. As observed, a considerable amount of literature has been written and published in Malaysia on the topic of capital structure and firm's performance [1,2]. The term capital structure refers to financing opted by a firm to fund its business operations and to sustain its financial growth. Specifically, capital structure is a combination of debts, equities and hybrid securities by which a firm invests in its operations and assets [3,4]. Capital can be classified into equity and debt. Equity capital refers to the capital which is owned by shareholders**,** while debt is a capital which is borrowed by a firm from different sources such as bond, bank loan etc. In other words,a capital structure of a firm represents a very clear picture of its growth and position. Conventionally, the two main important sources of firm financing are internal and external financing. Retained earnings are referred as internal financing, while external financing could be further sub-divided into debt and equity. [5]. Therefore, the factors that influence on firm's capital structure must be identified as it passages firms towards designing an appropriate and optimal capital structure which leads firm in the direction of achieving its main aim of growth. Optimal capital structure is a combination of debt and equity which minimize weighted average cost of capital (WACC) and maximize firms' value[6]. Capital structure theories have been tried to explain capital structure, but for optimal capital structure, there is yet a need for a required model which can define the best mix of debt and equity.

In Malaysian capital market, main market of Bursa Malaysia is one of the major central capital markets which plays a vital and sensitive role in the growth of Malaysia's economy [7]. It directly involves in a downturn or growth of country's economy. After studying in-depth literature reviews in the context of Malaysian capital market, it was found that in Malaysia, many studies to investigate determinants of capital structure have been conducted on different sectorial levels of main market, but to date, it has not been examined by selecting the entire main market of Bursa Malaysia [8]. The findings from this study can assist financial managers of main market listed firms to take adequate capital structure decisions.

A number of studies have been done on determinants of capital structure in Malaysia, yet many researchers have not come to a conclusive finding as these investigations are focused on a few or some particular sectors [9]. Therefore, the capital structure determinants still have been an issue in Malaysia [10,11]. To resolve the said issue, an investigation considering the entire Malaysian main market and its varying business models are warranted. An appropriate selection of capital structure determinants always leads to business success [12,13]. The fourteen sectors in Bursa Malaysia are characterized by different business models [14]. No doubt that banking industry in Bursa Malaysia maintains capital structure successfully due to the central bank monitoring. However, further investigation is required to provide a better understanding in the nature of capital structure determinants for Malaysian public listed companies [15].

2. Literature Review

On the basis of the conventional theories of capital structure, the modern studies on capital structure was initiated by [16]. Principally, MM Theory consist of three propositions. In proposition I, they developed capital structure irrelevance

proposition which hypothesized that under a perfect capital market, a firm decision related to capital structure is independent from its market value and related cost of capital. Essentially, a perfect capital market exists when there is no existence of transaction cost, agency and bankruptcy cost, taxes and symmetry of information. Likewise, as per proposition II, firm's leverage has no effect on weighted average cost of capital (WACC) [17]. Proposition III stated that firm's value is not affected by dividend policy of firm. [18,19]. In addition, another capital structure theory which is more similar to MM Theory is Trade-off Theory. This theory suggests the idea that firms can choose their capital structure by balancing the benefits of borrowing, especially tax savings and with the costs which are related to borrowing counting bankruptcy costs [20]. In comparision, Trade-off Theory basically sets as a competitor to Pecking Order Theory and attention on the idea of cost of financial distress and agency cost [21]. However, Pecking Order Theory gives first preferences to internal financing, then debt and then in the end equity. Pecking Order Theory believes that financing cost would increase with the asymmetric information and does not focus on optimal capital structure [22,23,24].

[25] investigates the determinants of capital structure of Malaysian firms by providing new visions by relating capital structure with market power and profitability. [26] highlights the observed target determinants of firm's capital structure and the process of adjustment to achieve selected target. [27] study the determinants of capital structure in Asia pacific countries and found that capital structure of countries is dependent on environment in which firms are operating. [28] analyze the determinants of capital formation for the service industry of US and check the impact of income tax, size, profit and growth on return on equity (ROA), a finding that shows that leverage is an indirect relation to firm's performance.

[29] explores the best practices of firm's capital structure in Malaysia and found substantial relationship to the firm's capital structure.[30] investigates capital structure determinants of Malaysian small and medium size enterprises (SMEs).The result of this investigation reveals that small medium enterprises and large firms capital structure determinants are nearly similar [31] follows Static Trade-off Theory and Pecking Order Theory and finds the negative association between capital structure and profitability of firms.A study by [32] aims to analyze the capital structure determinants of small, medium and large firms of Malaysia by discussing Trade-off Theory and Pecking Order Theory.

A study by [33] explain the capital structure determinants of Malaysian electronic and electronic sector. By using debt ratio as a variable for capital structure, results are found on average. [34] studies capital structure determinants of listed firms of Malaysian food producer sector. Total debt ratio is taken as dependent vaiables and size, growth, liquidity and asset tangibility are taken as independent variables to investigate the capital structure determinants of firms. [35] study capital structure determinants of Thailand, Indonesia and Malaysia and found company size, profitability and volatility have main and steady roles in defining the variation of firm's capital structure. Their results showed that capital structure of firm is significantly associated to the firm's performance.

3. Data and Methodology

This study covers all main market sectors of Bursa Malaysia. For the investigation purposes, a twelve year data from 2005-2016 are extracted from Bloomberg database. A total of 558 firms is taken for a sample set to analyze capital structure factors of listed main market firms. The main proxies which are taken as independent variables are total assets, fixed assets, current assets, sales, return on equity and earning per share. Debt Equity ratio (DE) is taken as dependent variables. In order to investigate the panel data, the SAS software program is utilized.

Table 1: Sectorial Distribution at Bursa Malaysia Securities Berhad

No.	Main Market Segment
1	REIT
2	Close End Funds
3	Construction
4	Hotel
5	IPC
6	Minning
7	Plantation
8	Properties
9	Trading/ Services
10	SPAC
11	Technology
12	Consumer Products
13	Industrial Products

The model provides the framework for analysis and explaining the theoretical relationships between the independent and dependent variables. The most common methodology involves the deployment of two static panel data analysis, namely random effect model and fixed effect model [36]. This study employs static pooled OLS analysis on a sample of 558 listed firms in Bursa Malaysia main market over a 12-year period from 2005 to 2016.

Static panel data regression are extensively used by researchers to examine the individual behavior in a repetitive environment [37,38,39]. In the following static panel model, y_{it} is considered as a variable of attention

$$y_{it} = x_{it}\beta + \propto_i + v_{it} \quad i = 1, \dots N \ (Individuals) \ t = 1, \dots, T(time)$$

On k explanatory variables, the parameter vector is β, it-th observation is x, the individual unobserved specific invariant time effects is $\propto_i$ and the mean of residual disturbance is zero, and variance is constant and un-correlated across individuals and time. By considering the above model and the nature of $\propto_i$, two different static panel data models can be developed:

(i) **Random Effect Model :-** This model considers $\propto_i$ as a random proxies which are uncorrelated with v_{it}. In random models, the individual effects $\propto_i$ are not correlated with regressors. By using Generalized Least Squares (GLS) parameters β can estimate efficiently, consistently and unbiasedly. It must be taken into consideration that Ordinary Least Squares (OLS) estimators are not efficient between individuals effects and regressors below the hypothesis of no correlation between individual effects and regressors.

(ii) **Fixed Effects Model:-** This model considers that $\propto_i$ are individual fixed parameters. In fixed effects models, it is not necessary to assume no correlations between individual effects and regressors. Fixed effects estimators are estimators which are used to estimate within the group (WG) estimators. This can be obtained with an OLS estimation transformation model where no individual effects are present:

$$y_{it} - \overline{y_i} = (x_{it} - \overline{y_i})' \beta + (v_{it} - \bar{v}_i) \qquad (1)$$

Where

$$\overline{y_i} = \frac{1}{T} \sum_{t=1}^{t} y_{it} \, , \; \overline{x}_i = \frac{1}{T} \sum_{t=1}^{t} x_{it} \; \text{and} \; \bar{v}_i = \frac{1}{T} \sum_{t=1}^{t} v_{it}$$

GLS, WG and OLS methods are strong below heteroskedastic disturbances [40] although GLS, OLS and WG do not have acceptable properties when the model dynamic structure is presented [41].
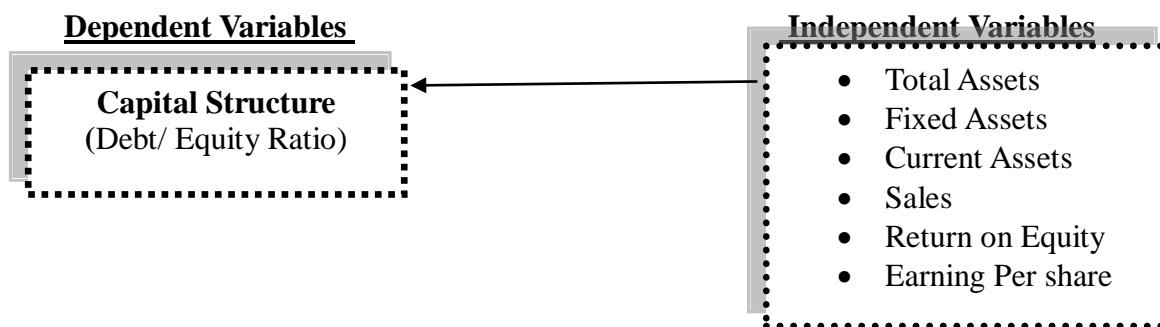
Dependent Variables

Capital Structure
(Debt/ Equity Ratio)

Independent Variables

- Total Assets
- Fixed Assets
- Current Assets
- Sales
- Return on Equity
- Earning Per share

Figure 1: Theoretical Framework of Capital Structure Determinants

4. Empirical Findings

In analyzing the statistical results, the data are extracted into SAS program and investigated. The findings of the panel data are shown below. To demonstrate the effect of changes in specific factors on firm's capital structure, the empirical results are discussed in Table 2, Table 3 and Table 4 respectively. As explained earlier, the pooled OLS panel procedure is used as an estimation model for this static panel data framework. To begin with, the model description and fit statistics are presented in the following paragraph.

Table 2: Pooled (OLS) Estimations

Model Description Dependent Variable: Debt Equity Ratio	
Estimation Method	Pooled
Number of Cross Sections	558
Time Series Length	12

Looking at the fit statistics in Table 2 below, the low R^2 of 11.61% may not warrant a desirable goodness of fit for this estimated model. However, this statistical limitation is not an alarming issue for static panel data modeling, particularly in the case of cross-section dominant. Generally, the R^2 is expected to take a lower value when the panel data is more cross-section dominant. In panel data analysis, one will rely more on individual significance than the R^2 alone. Due to heterogeneity of cross-sectional data, it is anticipated that the model will deliver low R^2.

Fit Statistics			
SSE	7222.7352	DFE	6676
MSE	1.0819	Root MSE	1.0401
R-Square	0.1161		

The empirical results from pooled OLS regression in Table 3 indicate acceptance of four alternative hypothesis on four independent variables, namely TASSET, CA, SALES and EPS. First of all, there is a statistically negative significant relationship between TASSET and firm's capital structure as measured by DE. Somehow, this finding contradicts the findings of earlier studies. Secondly, the relationship between CA and DE is found to be positively significant, suggesting that any increase in the firm's CA will in turn increase the level of DE. In the case of SALES, any increase in sales revenue will reduce the level of firm's DE. The best explanation could be the preference of firm in utilizing its net profits to reduce firm's debt level. As such, the Pecking Order Theory seems relevant in explaining this corporate's decision. This notion makes a lot of sense when EPS is proven to be statistically significant in influencing firm's DE. Similar to SALES, any increase in firm's EPS will also reduce the level of firm's DE. This finding is consistent with Modigliani-Miller Theory which postulates the importance of future earnings in influencing the level of firm's capital structure.

H_0: Absence of Significant Relationship between Capital Structure and Firm's Specific Factors

H_1: Existence of Significant Relationship between Capital Structure and Firm's Specific Factors

Table 3: Pooled OLS Analysis

Parameter Estimates						
Variable	DF	Estimate	Standard Error	t Value	Pr > |t|	Label
Intercept	1	0.83356	0.0134	62.10	<.0001	Intercept
TASSET	1	-0.00005	0.000012	-4.18	<.0001*	Total Assets
FASSET	1	0.000017	0.000013	1.30	0.1951	Fixed Assets
CA	1	0.000327	0.000020	16.46	<.0001*	Current Asset
SALES	1	-0.00008	8.548E-6	-8.93	<.0001*	Company Size
ROE	1	-0.00718	0.00540	-1.33	0.1838	Return on Equity
EPS	1	-0.03534	0.0112	-3.17	0.0015*	Earnings Per Share

* significant at 5% level

According to Table 4, it is clear that the mean DE for all 558 companies is moderately low at 88 percent coupled with the median of 61 percent. The mean of TASSET stands at RM1.632 billion and its mode settles at lower level of RM529 million. The CA registers a lower sample mean of approximately RM589 million with the mode of RM45 million. On the back of moderately high mean sales revenue of RM824 million, the mean percentage of ROE is positively kept around 17.5%. It is interesting to highlight that the mean EPS also stands at relatively high level of almost 13.3 percent, providing solid earnings potential to firm's shareholders. These preliminary findings seem credible to support some of the capital structure theories in the literature review.

Table 4: Descriptive Statistics

Variable	Maximum	Mean	Minimum	Std Dev	Median	Mode
DE	37.8510600	0.8875396	0.1556	1.1050020	0.6138170	0.6895
TASSET	132902.20	1632.25	3.7850000	6559.88	317.8343000	529.4569900
FASSET	101685.40	728.3448108	245.90	3888.24	98.2140000	129.0760600
CA	81459.81	588.5991075	2.7954000	2211.03	149.3967000	45.3467000
SALES	47254.50	823.8098610	253.90	2742.76	200.9109000	359.890
ROE	149.6860000	0.1744602	-9.2822920	3.8179051	0.0679655	0.1622620
EPS	72.3870000	0.1322030	-9.4240000	1.1424683	0.0540000	0.0200000

5. Conclusion

From the empirical results of pooled OLS model, the study has discovered four key determinants to the firm's capital structure. TASSET, SALES and EPS are found to be statistically significant with negative relationship to DE. With respect to EPS, an increase in firm's corporate earnings will pave ways for company to reduce its debt level effectively. On the other hand, a positive significant relationship between CA and DE signals firm's credibility in managing its liquidity. Any increase in the level of firm's current asset is likely to be supported by short-term borrowings. As such, working capital management seems credible in explaining firm's choice of financing. An efficient liquidity management not only helps ensure a firm's ability to meet cash flow obligations, but also create a trade-off between the cost of debt and the benefit of debt. As explained by the Trade-off Theory, so long as the benefit of debts outweighs the cost of debts, the firm is expected to move towards its optimal point of capital structure. It is hoped that the top management of a company would understand the important interactions between firm's capital structure and its specific factors, particularly earnings potential and liquidity management. No doubt that every manager works to maximize shareholders' wealth but ultimately one must strike the balance between firm's financial soundness and its long-run sustainability.

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