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HOW DO WE EXPLAIN THE CAPITAL STRUCTURE OF SHARIAH-COMPLIANT FIRMS?

Nor Arni Nazira Othman[1]
Norhisam Bulot[2*]
Nor Anis Shafai[3]

[1] Faculty of Business and Management, Universiti Teknologi MARA, Cawangan Perlis, Kampus Arau, 02600 Arau, Perlis, Malaysia (E-mail: naziraarni334@gmail.com)
[2] Faculty of Business and Management, Universiti Teknologi MARA, Cawangan Perlis, Kampus Arau, 02600 Arau, Perlis, Malaysia (Email: norhisam@uitm.edu.my)
[3] Faculty of Business and Management, Universiti Teknologi MARA, Cawangan Perlis, Kampus Arau, 02600 Arau, Perlis, Malaysia (E-mail: anis448@uitm.edu.my)

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Abstract*: The main objective of this study is to provide further evidence on the determinants of capital structure. A better understanding of this topic is important not only for the purpose of enriching empirical studies in this field but also for the purpose of industrial and cross-country comparison. The use of variable selection technique as well the data from the non-financial shariah-compliant firms is the unique contribution of this paper. The data for the final sample consists of 69 firms (1030 observations) and analyzed using the static panel data analysis technique. Consistent with the pecking order theory, the study finds that the capital structure of the firms is significantly and negatively affected by the profitability of firms. Unlike most of the previous studies, this research found there is no significant effect of liquidity and effective tax rate on capital structure of the firms. Although this paper provides interesting empirical evidence, several areas need to be refined with future empirical research. First, Stata command "vselect" was the only variable selection technique used in this research. The use of other techniques (or Stata command) might lead to a formation of a different set of models. Second, this paper has not taken into consideration the effect of using different data analysis techniques (such as GMM). Future studies might want to explore the use of other data analysis techniques in analyzing the data.*

Keywords*: Capital Structure; Shariah-Compliant; Pecking Order Theory; Trade-off Theory; Variable Selection Technique*

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Introduction

The relative number of various sources of funds used in a business is termed as capital structure. The capital structure of a company is made up of debt and equity securities that comprise a firm's financing of its assets. The decisions relating to financing the assets of a firm are very crucial in every business and the finance manager is often caught in the dilemma of what the optimum proportion of debt and equity should be. The main question to be answered is "What should be the appropriate proportion between owned and debt capital? This question is concerned with the decision on how the firm decides to divide its cash flows into two broad components, a fixed component that is earmarked to meet the obligations toward debt capital and a residual component that belongs to equity shareholders. The company should carefully choose the best mix of capital structure as it will affect the company's value, overall cost of capital, share price, investment opportunities and growth. Given the importance of this topic, many researches have been conducted to understand and explain the variation in the capital structure of the firms (Ahmed Sheikh & Wang, 2011; Alalmai et al., 2020; Alipour et al., 2015; Bolarinwa et al., 2019; Cappa et al., 2020; Czerwonka & Jaworski, 2021; Guizani, 2021; Kahya et al., 2020; Khan et al., 2021; Kyissima et al., 2020; Panda & Nanda, 2020; Saif-Alyousfi et al., 2020). Despite the amount of research that has been conducted on this topic, there are areas that are still lacking and can be improved with future research. This research is novel and original as we are using and investigating the determinants of capital structure for a new group of companies: Shariah-compliant firms from the Top 100 firms in Malaysia. We contend that due the nature of the companies, empirical findings from other research cannot be generalized to this study sample, hence the need for research specifically on this group of companies. The paper is organized as follows: In Section 2, we introduce the theoretical background and deals with the determinants and driving factors of the capital structure. Section 3 describes the research methodology. Section 4 presents and discuss the results of the empirical analysis. Finally, Section 5 summarizes the findings of the research and concludes the discussion.

Empirical Determinants

The research on capital structure is very comprehensive, and many theories have been proposed in the literature on finance regarding capital structure, but it was Modigliani et al (1958) who formed the basis of the first capital structure theorem. Modigliani et al (1958) argued that the capital structure of a firm is irrelevant to the firm's value, assuming perfect markets and zero transaction costs. In this section, we will only make a brief review of the different determinants of capital structure that are used in this paper. Based on data availability, the following initial model on the determinants of capital structure is analyzed in this paper: liquidity (LIQ), effective tax rate (TAX), profitability (PROF) and Growth (GRO). The general form of the model can be specified as follows:

$$CS = f(LIQ, TAX, PROF, GRO) \quad (1)$$

Liquidity: Liquidity levels of the company have a mixed impact on capital structure decisions. According to the Trade-off Theory (TOT), companies should ensure sufficient level of liquidity to meet their commitments and considering this theory, there has to be a positive relationship between liquidity and debt ratios/capital structure. In contrast, other theories such as Pecking Order Theory (POT) and Agency Theory (AT) supports the negative relationship between liquidity and debt ratios. According to these theories, firms that have sufficient level of liquidity have less requirements for external financing and borrowing as they can use the internal fund that they must finance the operations. A further argument for this negative relationship is provided by (Myers & Rajan, 1998). They argue that when agency costs of liquidity are high,

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outside creditors limit the amount of debt financing available to the company. In this paper the ratio of current assets to current liabilities earned is used as a proxy to estimate the firms' liquidity.

Effective Tax Rate: Tax rate has a predicted positive impact on debt. A company facing a high effective corporate tax rate has a need for or will benefit from, taking up more debt to maximize the tax deduction of the debt interest. Modigliani et al (1958) concluded that firms would prefer debt to other financing resources due to the tax deductibility of interest payments. The gains from borrowing increase with the rate of tax. Therefore, a positive relationship is expected between effective tax rate and debt. Moreover, based on TOT, income tax is positively associated with debt. That there is a significant positive relationship between effective tax rate of firms and long-term debt ratio and that tax affects financing decisions. On the contrary, other researchers such as Karadeniz et al (2009) believe that there is a negative relationship between effective tax rate and debt ratios. They argue that the effect of this rate on capital structure depends on tax regulations of each country. Other researchers such as Huang & Song (2006) concluded that there is no relationship between effective tax rate and the amount of debt in capital structure. In this paper, the ratio of the average tax paid by businesses as a percentage of the profits earned is used as a proxy to estimate the firms' effective tax rate.

Profitability: To determine a company's success or failure, profitability must be considered. Profitability may be defined as a company's ability to generate a return on an investment based on the company's resources in comparison to an alternative investment. Profitability can be measured using Profit Margin Ratios (i.e., operating profit margin) and Rate of Return Ratios (i.e., return on equity). Previous studies, such as Khan et al (2021) and Ahmed Sheikh & Wang (2011) have found a negative relationship with the capital structure. The POT supports this negative correlation, which argues that firms prioritize their sources of financing (from internal financing to equity) and consider equity financing as a last resort. TOT on the other hand explains a positive relationship with capital structure in terms of debt. In this paper, the ratio of Operating Profit Margin is used as a proxy to estimate the firms' profitability.

Growth opportunities: According to POT, growing firms place a greater demand on the internally generated funds of the firm. As a result, firms with relatively high growth will tend to issue securities less subject to information asymmetries, i.e. short-term debt. This should lead to firms with relatively higher growth having more leverage Viviani (2008), hence high borrowing. This argument is in line with the Agency Theory which argues that firm's financing is a vehicle by which investors and managers can solve the problem of free cash flow. Based on this theory, firms with more growth opportunities have more debt. On the contrary, based on the TOT, there should be a negative relationship between growth opportunities and debt ratios. This is in line with the conclusions made by (Huang & Song, 2006; Ooi, 1999). Eriotis et al (2007) and Karadeniz et al (2009) on the other hand concluded that there is no significant relationship between growth opportunities and debt ratios. In this study, sales growth, which is calculated by subtracting current year sales from that of the previous year and dividing the result by previous year sales, is used as a proxy to estimate the firms' growth opportunities.

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Material And Methodology

Data

This study investigates the capital structure determinants for emerging markets using Malaysian companies. The initial sample consists of all companies in the FTSE Bursa Malaysia Top 100 Index. This index comprises the constituents of the FTSE Bursa Malaysia KLCI (30 companies) and the FTSE Bursa Malaysia Mid 70 Index (70 companies). All non-shariah compliant firms, firms with any missing observations for any variable during the sample period have been dropped. Firms which operate in the financial sector are not included in this analysis, as their balance sheets have a different structure from those of the non-financial firms. The final sample includes 69 firms with 1030 observations. Our data are an unbalanced panel due to missing observations. The choice of the sample period, from 2017 to 2021, is guided by the availability of data and the objective of maintaining the same time frame to allow for comparability.

Model

In this study we used a general model for panel data that makes it possible to produce an empirical estimate of the relationship between leverage (dependent) and firm-specific (independent) variables. We formulate the model as follows:

$$CS_{it} = \alpha + \beta_1 LIQit + \beta_2 TAXit + \beta_3 PROF_{it} + \beta_3 GRO_{it} + \varepsilon_{it} \quad (2)$$

Where: CS_{it} is the capital structure of company i at time t, $\beta_1 LIQ_{it}$ is the liquidity of the company i at time t, $\beta_2 TAXit$ is the effective tax rate of company i at time t, $\beta_3 PROF_{it}$ is profit of company i at time t, $\beta_3 GRO_{it}$ is the growth of the company i at time t and ε_{it} represent the error term of company i at time t.

Data Analysis Procedure

The steps used to analyze the data can be divided into three. The detailed explanations of these steps are as follows:

The first step is to determine the most optimal combination of predictors. In this study, Stata command, *vselect*, developed by Lindsey & Sheather (2010) is used to determine whether a certain variable should be included in the model. Following Lindsey & Sheather (2010), the optimal model is defined as the one that optimizes one or more information criteria. Those criteria are Mallow's Cp (C), Adjusted R2 (R2ADJ), Akaike's information criterion (AIC), Akaike's corrected information criterion (AICC), and Bayesian information criterion (BIC). This research uses the definitions of these criteria given in (J, 2009). Generally, higher variance explained by the model R2ADJ and lower C, AIC, AICC and BIC values indicate the best fitting model (Lindsey & Sheather, 2010).

The second step is to choose the most appropriate static panel data estimator. The three available techniques for analyzing static panel data are Pooled Ordinary Least Squares (POLS), Random Effects (RE) and Fixed Effects (FE). The choice of the most appropriate static technique depends upon three types of tests as suggested and outlined by (Park Myoung Hu, 2011). The tests are F-test, Breusch-Pagan Lagrange Multiplier (BP-LM) test, and Hausman test.

The third and final step is to perform the diagnostic tests (multicollinearity, heteroscedasticity, and serial correlation) and find the correct strategy to rectify the problem(s) identified (if any). The strategy to rectify the problem(s) will be based on the suggestion by (Hoechle, 2007).

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Measures

The way of calculating the dependent and independent variables is briefly presented in Table 1.

Table 1: Variable Description and Data Sources

Variables	Description	Sources
Capital Structure	The ratio of debt to capital	EIKON
Liquidity	The ratio of current assets to current liabilities	EIKON
Effective Tax Rate	The average tax paid by businesses as a percentage of the profits earned	EIKON
Profitability	Operating Profit Margin	EIKON
Growth Opportunities	Calculated by subtracting current year sales from that of the previous year and dividing the result by previous year sales	EIKON

Findings

Descriptive Statistics

In Table 2, descriptive statistics of dependent and independent variables are presented. As shown in the table, the mean leverage for the sample is 15.36% indicating the use of less leverage by the firms.

Table 2: Descriptive Statistics

Variable	N	Mean	SD	Min	Max
Leverage	1,123	.1536866	.1684472	0	2.75
Profitability	1,119	.1536372	.232826	-3.61	1.47
Tax Rate	1,048	.2487214	1.248534	-2.64	28.77
Liquidity	1,124	2.428648	10.04248	.01	332.4
Growth Opportunity	1,013	.0142547	.762023	-17.48	10.21

Statement of Results

The first data analysis step is to determine the most optimal combination of predictors. As shown in Table 3, the suggested number of predictors were 2 for R2ADJ and C, and three for AIC, AICC, and BIC. Following the explanation provided in section 3.3 (Step 1), the three-predictor model is chosen. The chosen variables are liquidity (LIQ), profitability (PROF) and tax rate (TAX). Growth opportunity (GRO) will not be included in the final analysis.

Table 3: Variable Selection

Suggested number of predictors					Optimal Model	
R2ADJ	C	AIC	AICC	BIC	Number of predictors	Selected predictors
2	2	3	3	3	3	Liquidity, Tax Rate and Profitability

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The second step is to choose the most appropriate panel data estimator. The three available alternatives are pooled ordinary least squares (POLS), fixed effects (FE), and random effects (RE) models. The result of the panel specification tests as presented in Table 4 suggests that the fixed effect model is the most appropriate data analysis technique.

Table 4: Panel Specification Tests

p-values of the tests			Technique
F-test	BP-LM	Hausman	
0.0000	0.0000	0.0005	Fixed Effect

Various diagnostic tests were then performed to check for the presence of multicollinearity, heteroskedasticity and serial correlation problems. As presented in Table 5, the diagnostic tests on the baseline model indicate the presence of heteroskedasticity and serial correlation problems. Following the suggestion by Hoechle (2007), the remedial procedure has been carried out by using the "Fixed-effects (within) regression with cluster option".

Table 5: Diagnostic Tests

p-values of the tests			Strategy
VIF	H	SC	
1.01	0.0000	0.0000	"Fixed-effects (within) regression with cluster option"

As shown in Table 6, the regression result suggests that the model fits the data well at the 0.05 significance level. The Adjusted R2 of 0.6010 suggests that the three independent variables explain 60.10% of the variance in the capital structure. The remaining 39.90% is explained by other variables that were not included in the model. The results of the regression also suggest that profitability has a statistically significant relationship with leverage. Liquidity and effective tax rate do not appear to be significantly related to capital structure. In addition to that, profitability seems to have the greatest influence on the capital structure, which is explained by the highest t-value of 2.42.

Table 6: Regression Results

	Fixed Effect
Liquidity	0.0000
	(0.01)
Tax Rate	-0.0037
	(-0.86)
dProfitability	-0.0956**
	(-2.42)
Constant	0.1682***
	(23.31)
Observations	1030
R^2	0.6278
Adjusted R^2	0.6010
F	2.1887
p	0.0008

t statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

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Discussion

The objective of this study is to investigate factors affecting capital structure decisions of top 100 shariah-compliant firms listed in Malaysia. This section will discuss some of the important findings of this research.

The most optimal model: The first process in analyzing the data was to determine the most optimal combination of predictors to be included in the final model. In this paper, we started off with four variables and the final model consisted of three variables. It is apparent that the choice of different proxy for dependent and independent variables, as well as the use of data from different samples would lead to different conclusions on the types and number and types of variables to be included in the model.

Explanatory power of the model (Adjusted R2): The relatively low overall explanatory power of the model implies that there might be imperfect representations of variables in this paper. The possible reason for this is the use of different dataset in examining the determinants of capital structure.

Liquidity: In this paper we found no statistically significant relationship between the level of a firm's liquidity and debt. This implies the insignificant effect of liquidity position of the firms on their capital structure decision.

Tax Rate: Consistent with the finding by Huang & Song (2006), this paper found no statistically significant relationship between effective tax rate and the amount of debt in capital structure.

Profitability: The findings of this paper suggest a statistically significant relationship between profitability and the amount of debt in capital structure. Consistent with the POT and previous studies such as Ahmed Sheikh & Wang (2011) and Khan et al (2021), this study confirms the assumption that capital structure is negatively and significantly related to a firm’s profitability. The negative connection implies that firms finance their operations in accordance with pecking order theory’s financing pattern. That is, firms will prioritize internal finance over external financing.

Conclusion and Recommendations For Future Research

The main objective of this paper is to examine factors affecting the capital structure decision of Top 100 firms in Malaysia. The initial model consisted of four independent variables. The result of the analysis suggested that only three independent variables should be included in the final analysis. Out of the three variables only one variable (Profitability) found to have a statistically significant relationship with capital structure. While this paper has produced interesting findings and contributions to the existing literature, it has several limitations which can be improved by future research. First, Stata command *vselect* was the only variable selection technique used in this research. The use of other techniques (or Stata command) might lead to a formation of a different set of models. Second, this paper has not taken into consideration the effect of using different data analysis techniques (such as GMM). Future studies might want to explore the use of other techniques in analyzing the data.

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