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Capital Structure of Property Sector in Malaysia

Zahariah Sahudin*, Hasni Abdullah, Nura Lina Md Elias, Husniyati Ali, Annurizal Anuar,

Universiti Teknologi Mara, Puncak Alam, Selangor, Malaysia

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ABSTRACT

The inconclusiveness of findings on the capital structure has been the main debatable topic and repeatedly discussed to date. This paper is providing new empirical evidence on the relationship between capital structure and firm efficiency by investigating the sample of Syariah-compliant property firms in Malaysia from 2002 to 2011. By employing panel data, this study is examining the factors influencing the firm leverage and analysing the dynamic aspect of the capital structure of the listed Syariah-compliant property firms in Malaysia. The study employs a parametric Stochastic Frontier Analysis (SFA) method as well, to empirically construct the property industry's 'best practice' frontier and measure the firm's efficiency as the distance from that frontier. Using these performance measures, the researchers examine how efficient firms decide debt level in their capital structure.

In summary, it is found that the effects of efficiency on capital structure are as stated in the efficiency-risk hypothesis. Based on the Generalised Method of Moment (Differenced GMM), the results indicate that seven determinants are found significantly influencing the capital structure decision of the firms, particularly in the property sector in Malaysia. Those determinants are tangibility, profitability, interest coverage ratio, quick ratio, Z-Score, market-to-book ratio and efficiency. Generally, the findings support both static trade-off theory and pecking order theory for Malaysian Shariah-compliant property firms.

1. Introduction

The study on the capital structure of the Shariah-compliant firms is still scarce, especially on the optimisation of capital structure and such comprehensive research on this area still lacks in literature. Therefore this study anticipates filling the gap by investigating the determinants of the capital structure of

* Corresponding author. *E-mail address*: zahariah128@uitm.edu.my

these firms in order to understand the financing behaviour of Shariah-compliant firms further specifically the property sector in Malaysia (Sahudin, Ismail, Sulaiman, Rahman, & Jaafar, 2019).

In today's dynamic and highly competitive business atmosphere, capital structure plays a crucial role in ensuring a competitive and sustainable growth of a firm. Presently, in Malaysia, managing capital structure and restructuring activities have become a significant concern due to the global financial crisis and the bubble economy which have led to financial distress, liquidation and bankruptcy among significant businesses. The appropriate mix of capital structure is not only imperious to maximise the interest of the stakeholders. It is also essential for that organisation to compete competently and efficiently in its operating environment (Simerly & Li, 1999) whether the firm is either a Shariah-compliant or Shariah non-compliant firm. Erroneous on deciding the mix of capital structure will lead to financial distress, indebtedness to the organisation (Eriotis, Vasiliou, & Neokosmidi, 2007). It will affect the firm performance in the long run and the economy negatively as well.

Modigliani and Miller are the pioneers who have developed the capital structure theories in 1958. Since then, a variety of theories and hypothesis have been developed to explain the optimality and capital structure decisions of firms. Even though there is an abundance of literature that has been the conceptualisation of capital structure, it is still inconclusive (Haron, 2014a) and the capital structure still becomes a dilemma to the firms as stated by Rajan and Zingales (1995).

Two fundamental theories have always been referred to in capital structure studies which are the trade-off theory (Kraus & Litzenberger, 1973) and pecking order theory (Myers, 1984; Myers & Majluf, 1984). The capital structure trade-off theory assumes that the firm will be achieving its capital structure optimality if its marginal benefits are equivalent to the marginal costs (Shyam-Sunder & Myers, 1999). It can also be attained by balancing the benefits of tax (De Angelo & Masulis, 1980) against the financial distress costs or bankruptcy risks (Kraus & Litzenberger, 1973) and agency costs (Jensen & Meckling, 1976).

Alternatively, in pecking order theory there exists asymmetric information between the managers and investors (Fama & French, 2002; Harris & Raviv, 1991; Wiwattanakantang, 1999; Booth, Aivazian, Demirguc-Kunt, & Maksimovic, 2001; Deesomsak et al., 2004; Chen, 2004; De Jong et al., 2008). The managers prefer to choose internal sources as a primary source of financing, with the least information cost first, before they go for external sources of financing. This is consistent with Myers and Majluf (1984). They argue that internal financing such as earnings after tax or retained earnings is preferred to be used rather than external financings such as debt and equity. If the internal reserves diminish, then the firms will opt for debt financing rather than equity.

The study on large listed firms has been monopolising the trend in the capital structure studies due to the accessibility of data (Rajan & Zingales, 1995). In recent years, researchers have begun to shift their attention to Shariah-compliant firms as the main focus of the study. Hence, this study will be focusing on Shariah-compliant firms in an emerging market, especially in Malaysia. The development of the Islamic capital market in Malaysia cannot be denied as it is a trillion ringgit industry in Malaysia. Under the second Capital Market Master Plan, the size of Malaysia's ICM is expected to expand at the average rate of 10.6% per annum over the ten years to 2020, to reach RM 2.9 trillion by 2020. To ensure its competency and durability, ICM has to be proactive and innovative in producing various products and services that are Shariah-compliant parallel with its conventional counterparts. One of the essential products is Shariah-compliant securities (listed firms) and looking at a remarkable trend. Shariah-compliant securities will continue to be one of the essential products of ICM (SC 2006).

With the establishment of Shariah Advisory Council (SAC), Securities Commission of Malaysia has set up a certain standard of parameters as guidelines in classifying Shariah-compliant securities. The central features of the Shariah-compliant securities are the prohibition of activities that involve interest (riba), gambling (maisir) as well as uncertainties and speculative trading (gharar). Periodical monitoring is carried

out to ensure continuous conformity of those firms to the Shariah principles (Sahudin, Ismail, Sulaiman, Rahman, & Jaafar, 2019).

1.1 Issues on Inconclusiveness & Inconsistency

The study on capital structure and firm value have gained very much attention in the past and present. It has become one of the world's debatable topics in the area of finance literature throughout the years, particularly after the seminal paper of MM (1958), and it is still being discussed amongst scholars due to the inconclusive findings (Haron, 2014a; Sahudin, Mahmood & Isa, 2014b). The issue of incomplete and inconclusive findings in the area of capital structure has been debated for so long, and remain questionable. It has been raised again by Haron (2014b) and Sahudin, Mahmood and Isa (2014b). Through their findings, they found that the explanation is theoretically lacking and the results are still inconsistent with resolving the issue on how the firms should choose their method of financing, especially in the developing or emerging countries. Boateng (2004) cited that deciding on capital structure is even more complicated when international characteristics are considered, specifically in developing markets with institutional constraints and controls.

The empirical research in the area of capital structure has lagged, and the concepts are not directly observable (Titman & Wessel, 1988). Some found that empirical evidence on the effect of determinants on the capital structure was mixed and inconsistent (Deesomsak et al., 2004). For an emerging market, Sheikh and Wang (2011) express that the findings of empirical studies are not solely due to the impact of the independent variable on capital structure only. This might seem due to dissimilarities in the terms used to define the leverage, whether it is long-term leverage or short-term leverage or because of institutional differences that exist between developed and developing countries. Given this, Udomsirikul, Jumreornvong and Jiraporn (2011) confirmed that the decisions on capital structure are involved, and multitude factors can influence them.

2. Literature Review

In 1958, Modigliani and Miller (M&M) introduced a theory based on what they called a perfect capital market (the absence of corporate taxes, transaction costs, and bankruptcy costs). According to them, the value of a firm is independent of its capital structure; thus, debt and equity are a perfect substitute for each other.

Several theories on capital structure have been developed after the M&M theory. Many empirical pieces of evidence conclude that capital structure is vital and the choice of capital structure could influence firm's cost of capital and eventually the value of the firm (Myers, 1984; Titman & Wessels, 1988; Sheikh & Wang, 2011).

According to Parrino and Kidwell (2009), the capital structure will be at the optimum level when the value of the firm is maximised, and the cost of financing is minimised. However, the existence of an optimal capital structure level remains vague and with no proper methodology specified to ascertain the optimum level of capital structure based on the individual firm's financial standing (Haron, 2014a). The percentage between debt and equity diverges depending on numerous factors, such as, firms' characteristics, macroeconomic factors and other factors which may have a direct impact on the firm's financing decision.

Numerous researches on capital structure concentrate on factors that determine the capital structure of firms. They were conducted based on countries, in comparison with East Asia countries by Driffield, Mahambare and Pal (2007), in Turkey by Arslan and Karan (2006), in the US by Jiraporn and Liu (2008), in Ghana by Boateng (2004), in Switzerland by Gaud, Jani, Hoesli and Bender (2005), in emerging countries in Latin America, Asia (excluding Japan), Africa, Middle East, as well as Eastern Europe by

Mitton (2008) and in Malaysia by Suto (2003). Studies in each country differ according to the exclusive environment of the country with similar determinants of the capital structure.

In an attempt to explain how a firm maximises its capital structure in this competitive world, countless theories in the literature of financial-economic have been developed and examined. The finance literature that explains the relationship between capital structure and the firm-specific factors such as bankruptcy costs, size of the firm, growth opportunities, total assets of the firm, profitability, tangibility as well as non-debt tax shield is among that has been examined. The country-specific factors are those of Gross Domestic Product (GDP) of that particular country, interest rates or lending rates. The examples of the studies on these issues include Modigliani and Miller (1958), Myers and Majluf (1984), Myers (1984), as well as Brounen et al. (2006).

Previous empirical findings have identified the determinants of capital structure at the firm-specific factor—all these factors influencing the company's capital structure decision. The following section reviews variables identified in previous literature relates them to capital structure theories and hypothesises the relationship between these variables and financial leverage.

Among others is assets' tangibility. It refers to the ratio of tangible fixed assets to total assets (Rajan & Zingales, 1995; Frank & Goyal, 2003; Kayo & Kimura, 2011; Arilyn, E, 2020). Tangibility plays a vital role in capital structure, as the collateral aspects of assets in place tend to increase leverage. Next is profitability. Profitability is measured by relating earnings before interest and tax (EBIT) to the total assets (Rajan & Zingales, 1995) and (Booth, Aivazian, Demirguc-Kunt & Maksimovic, 2001).

Interest cover ratio is also considered as one of the capital structure determinants to be considered in this study. Interest expense is proxy to interest payment to total debts (Ahmad & Rahim, 2013), and it is expressed as net income before taxes divided by interest payment (Baral, 2004). Other than that is quick ratio. Quick or acid test ratio is used to represent liquidity ratio which calculated by current assets minus inventories divided by current liabilities. It is also a determinant of capital structure. The next one is Z-score. Z-score is a linear model which consists of five different variables that have been modified and developed for different types of firms. It was said to be the first scoring model for credit. It was created by Edward Altman in 1968 (Altman, E, 1968).

On the other hand, a firm's size also become one of the determinants of capital structure. Firm size is proxy by the natural logarithm of the total assets. There is a positive relationship between the size of the firm and leverage. Non-debt tax shield (NDTS), also will give impact on the capital structure model. A non-debt tax shield is defined as annual depreciation expenses to a total asset. It can be the deduction of tax for non-debt items such as investment tax credits and depreciation (Williamson, 1967) and depletion allowances (Akhtar, 2005). These non-debt tax shields compete with interest as a tax deduction. Another factor that will be taken into consideration is a market-to-book ratio. It is measured by relating total liabilities and shareholders' equity to total assets. The market-to-book ratio represents market perception which measures how investors perceive a firm. And finally, efficiency score. It is measured by efficiency score which can be obtained from Stochastic Frontier Analysis. The score will be between 1.0 and 0.0. The score of 1.0 shows that the firm is fully efficient while score 0.0 indicates that the firm is inefficient.

3. Data and Methodology

The sample data includes firms in the property sectors extracted from Osiris database. After filtering out companies with missing information, the final data set consists of 43 companies listed in Bursa Malaysia during the period from 2002 to 2011. In order to analyse the data, the study applies the Stochastic Frontier Analysis (SFA) (Mukherjee, 2020). SFA is the estimation tool to estimate the frontier function and to measure the production efficiency of the firms. The reason why this study uses SFA is that it allows for both technical inefficiencies and it is also an alert for the presence of random shocks beyond the producer's control that may affect the output level (Berger & Humphrey, 1997).

Capital structure study is among many topics in economic research that are dynamic. Therefore, allowing for a dynamic model in the estimation technique may be essential to produce a consistent estimate of the parameters. Thus, the current study engages with the dynamic relationship by allowing the lagged dependent variable in the model. Also, this study concerns the long-standing issue of endogeneity that potentially leads to inconsistent estimates, incorrect inferences that eventually provide misleading conclusions and inappropriate theoretical explanations. Therefore, this study employs Generalised Method of Moments (GMM) to address the dynamic nature of capital structure as well as to address the issue of endogeneity in the estimation (Odhiambo, N. M, 2020; Appiah-Kubi, Malec, Maitah, Kutin, Pánková, Phiri, & Zaganjori, 2020).

GMM estimation techniques were developed by Arellano & Bond (1991) and Blundell & Bond (1998) to analyse the dynamic panel data. This model removes endogeneity by internally transforming the data that allow a variable's past value subtracting its present value. This study employs both transformation methods namely Difference and System GMM as to determine the best estimator for the panel data model.

3.1 Efficiency Model

The theory suggested by Meissen and Van den Broeck (1977) and also Battesse and Coelli (1992) has been adapted to a stochastic frontier production function by Haugland, Myrtveit and Nygaard (2007) which is being used in this study. This function is formulated in Equation 1 as follows:

$$Y_i = f(X_i, \beta)\varepsilon_i \quad (1)$$

Where Yi represents the output vector for firm i, Xi being the input vector, β being a parameter vector, and εi representing factor errors. This model explains the output produced as a function of the firm's resources or set of inputs, with the application of effects from technical inefficiency.

In the present study, the technical efficiency measures how firms could minimise costs in order to maximise profits. These are measured via the mathematical model in the SFA. Four variables, namely labour, financial capital, physical capital and current assets, are used as input; while the output is chosen is profit. By this, the input variables represent sources of a firm's activity, while the output variable represents the outcome from the firm's operational activities.

3.2 Leverage Model

The capital structure equation relates a firm's debts to its assets ratio to our measure of efficiency as well as to several other factors that have commonly been identified in the literature to be correlated with leverage (Myers, 2001). Following Titman and Wessels (1988), leverage is defined as the ratio of total debt to the total asset. The leverage equation is given by:

$$DR_{i,t} = \beta_0 + \beta_1 TAN_{it} + \beta_2 PROF_{it} + \beta_3 INTCOV_{it} + \beta_4 QUICK_{it} + \beta_5 ZSCORE_{it} + \beta_6 SIZE_{it} + \beta_7 NDTS_{it} + \beta_8 MTB_{it} + \beta_9 EFF_{it} + \varepsilon_{it} \quad (3)$$

Where $DR_{i,t}$ is proxy for a debt ratio of shariah-compliant property firms, *i* at time *t*, respectively. The tangibility of assets ($T_{ani,t}$), profitability ($PROF_{i,t}$), interest coverage ratio ($INTCOV_{i,t}$), quick ratio ($QUICK_{i,t}$), Z-Score ($ZSCORE_{i,t}$), size of the firm ($SIZE_{i,t}$), non-debt tax shield ($NDTS_{i,t}$), market to book

ratio ($MTB_{i,t}$) and efficiency ($EFF_{i,t}$) are the independent variables of *shariah*-compliant property firms, i at time t. $\varepsilon_{i,t}$ is the error term.

4. Results of the Dynamic Estimates

Table 1 reports the estimates of the Difference and System Generalise Method of Moments. Before making a comparison in determining the most preferred estimator between the two GMM, it is imperative to examine the diagnostic test on the estimators. This paper adopts three standard diagnostic tests to detect issues on GMM estimation. Firstly, the researchers begin with the diagnostic test by looking at the result of the Wald test, a test of joints significance that all the coefficients on the determinants of the leverage are jointly equal to zero. Then the existence of second-order correlation (AR2) of residual is observed, if present, it suggests some degree of misspecification. It is important to note that the absence of second-order correlation is crucial for the consistency of the GMM estimators when the lagged variables are instrumented by the lagged of the same variables. Then the Sargan Test is done to ensure the validity of instrumental variables applied in the model.

For System GMM, lagged (1) is significant. It shows that the previous year's leverage affects the current year leverage. While, for Differenced GMM, the result indicates that, lagged (2) is significant. This reveals that the leverage in two years back affects the current leverage. This is probably because of in the property sector, the time taken for the assets to be sold relatively long compared to other sectors' products. Therefore, the leverage of the two or three years back sometimes, will give impact to the current level of debt.

The results for efficiency shows that efficiency has a positive and significant at 1% level effect on debt ratio for Differenced GMM but insignificant for System GMM. This supports the efficiency-risk hypothesis. Under the efficiency-risk hypothesis, efficiency has a positive effect on leverage, where more efficient firms may choose higher debt to equity ratios because higher efficiency reduces the expected costs of bankruptcy and financial distress (Margaritis & Psillaki, 2007).

For the tangibility of the firm's, assets can serve as a proxy for the agency costs of debt and the costs of financial distress (Myers, 1977). Firms with more tangible assets have in general greater ability to secure debt as these assets can be used as collateral (Jensen & Meckling, 1976). The outcome reports that the tangibility for both Differenced and System GMM are significant at 1% level. The higher tangibility indicates that the firms should have more benefits or opportunities of investing in land, equipment and other tangible assets. Thus, the firms would have a lower cost of the fund compared to firms that depend primarily on intangible assets (Margaritis & Psillaki, 2007). The results also show that a higher proportion of tangible assets are more important to increase the debt capacity for the firms in the property industry. Furthermore, the higher the tangibility, the higher will be the leverage to produce more output. Therefore, tangibility has a positive correlation to the debt ratio.

Additionally, the study also finds that firms operating using more tangible assets give the impression of more efficiently operated firms. Firms that operate in the sector that has more tangible assets and substantial tangible investment opportunities are usually those that are adopting better technologies and are employing good, reliable and effective managers. In that way, these firms will achieve and improve efficiency compared to their peers in the same industry. Another firm-specific factor is profitability. It also has a significant positive relationship at 1% and 10% level for System GMM and Differenced GMM with the debt ratio. The effect of profitability appears to be more vital for firms with higher debt (Margaritis & Psillaki, 2007).

Table 1. Differenced and System GMM Estimates

MODEL	DIF GMM (LAG 2)	SYS GMM (LAG 1)
Explanatory Variables	Coefficient p-value	Coefficient p-value
LEV(-1)	0.2467 0.000***	0.2250 0.000***
EFF	2.7120 0.000***	-0.0375 0.284
TAN	0.0577 0.004***	0.0292 0.001***
PROFIT	0.0377 0.113*	0.0380 0.001***
INTCOV	-0.0266 0.128*	0.0204 0.038**
QUICK	-0.1864 0.000***	-0.1287 0.000***
ZSCORE	-0.3166 0.000***	-0.3666 0.000***
YEAR	-0.0892 0.000***	-0.0027 0.406
SIZE	4.6902 0.000***	0.0508 0.866
NDTS	-0.0232 0.478	-0.0238 0.054**
MTB	0.5038 0.000***	0.3795 0.002***
Number of instruments	63	127
Number of observations	242	310
Number of groups	40	43
AR(1)-p value	0.000	0.0000
AR(2)-p value	0.201	0.050
Sargan Test	0.007	0.000
Wald Test	0.000	0.000

Notes: ***, **, * are the significance level at 1%, 5% and 10% level

Thus, a positive profitability coefficient points to a situation in which external shareholders of immensely profitable firms face an incentive to demand bank debt as a means to shield profits from tax authorities. Banks would be willing to supply as long as they can easily discriminate between good and bad firms. This is so because firms having high leverage will invest funds in new high technology machinery and equipment which, subsequently, should make the firms all the more efficient and therefore, making such firms even more profitable.

Interestingly the correlation on interest coverage ratio is negatively related at the 10% level for Differenced GMM but positively significant at 5% level for System GMM. Interest coverage ratio indicates a company's capability to meet its interest payment from its operating profits. Baral (2004) explains that this relationship is possible because the firm with higher interest coverage ratio has more than enough cash flows required to service their debt and would not mind seeking more debt financing. However, he uses the debt capacity theory to explain the positive relationship between interest coverage ratio and long-term debt.

Inversely, it can be a negative relationship as well as the firms are unable to meet its interest payment, if the leverage amount is so huge.

Looking at the quick ratio, it has a robust negative significant correlation with debt ratio for both Differenced and System GMM. As pointed out by Bevan and Danbolt (2000) liquidity ratio variable is more relevant to short term debt because the company tends to use short term debt to finance their current assets. Hence, it can be concluded that Malaysian property firms prefer to use short term debt to finance its working capital relatively long-term debt.

On the other hand, Z-Score has a very significant negative relationship at 1% level debt ratio for both Differenced and System GMM. The trade-off hypothesis also predicts a negative relationship between the distance from bankruptcy and leverage. Thus, the financially healthy company is the company with low bankruptcy likelihood, which tends to have lower levels of debt. Corroborating this hypothesis, Friend and Lang (1988), find evidence that the larger the Altman Z-score (used as a proxy for a distance of the bankruptcy), the smaller the firm's leverage. Therefore, our hypothesis is, the longer the distance from bankruptcy, the lower the leverage. The proxy for the distance from bankruptcy is the Altman Z-score modified by Demsetz (1973).

The effect of size on leverage is a positive relationship with debt ratio at 1% level for Differenced GMM and insignificant relationship with debt ratio for System GMM. As larger firms are more diversified and tend to fail less often than smaller ones, we would expect that they have better access to credit and can sustain more debt (Friend and Lang, 1988). Nevertheless, the firm's size is also often pointed out as a factor influencing the capital structure choice. The positive correlation of size at 1% level on debt ratio may indicate that the larger the size of the firm, the more significant debt that the firm will incur as the firm is more profitable and more reputable. Thus, it would be possible for larger companies to increase their leverage, with more tangible asset-backed as collateral (Scott, 1977).

On top of that, Rajan and Zingales (1995), state that larger firms may be more diversified and thereby making them even less prone to the bankruptcy risk. Also, as a function of size, larger firms may have more outstanding debt capacity. Furthermore, the larger companies, being, in general, more transparent. Furthermore, they tend to have more massive debt levels and can issue accommodate amounts of debt, thus allowing them to spread the issuing costs. The greater company size means the greater possibility to diversify activities and a consequent decrease in the likelihood of bankruptcy (Warner, 1977; Ang, Chua and McConnell, 1982).

For non-debt tax shields, it has a significant negative relationship with debt ratio for System GMM but an insignificant relationship for Differenced GMM. These non-debt tax shields compete with interest as a tax deduction; thus, it has a significant correlation to debt at 5% level. Companies have an incentive to take debt because they can benefit from tax shield due to interest deductibility. Another view is that firms with a higher effective marginal tax rate should use more debt to obtain tax shield gain. This study predicted that non-debt tax shield is supposed to have a positive relationship with debt financing as the firm needs to shelter profit from being a tax. Thus any additional tax exemption should be beneficial for the firm.

Subsequently, the researcher found that the market-to-book ratio is significantly positively correlated with the debt ratio at 1% level for both Differenced and System GMM. According to Booth et al., (2001), the market-to-book ratio should have a positive relationship with leverage which shows that the 'value' stocks outperformed 'growth' stocks. Öztekin and Flannery (2012) stated that there is a positive correlation between the market-to-book ratio and leverage. Cheng, Wen, Jian, Yih and Su (2012) state that a higher market-to-book ratio tends to be a sign of more attractive future growth options, which a firm tends to

protect by limiting its leverage. Boussofiane, Dyson and Thanassoulis (1991), in their study, stated that the high ratio of market-to-book value signifies that the firms have better investment opportunities.

Based on the result, the study finds that the firm-specific factors like lagged dependent variable, tangibility, profitability, interest coverage ratio, quick ratio, Z-Score and market to book ratio are found to be consistently influencing the leverage of the shariah-compliant property sector for both Differenced and System GMM. Some of the above variables are positively correlated, and some of them have a negative correlation to the debt ratio at 1% level. Since the coefficient for the lagged dependent variable is less than 0.5000, it is more appropriate to use Differenced GMM.

5. Summary and Conclusion

This paper is to discuss and investigate the determinants of the capital structure of Shariah-compliant property firms over ten years, i.e. from 2002 to 2011. In order to understand the relationship between the leverage and the factors affecting leverage, for the study, two estimations are tested under the dynamic model, and the Differenced GMM is the preferred model.

Overall, the results from the analysis indicate that seven determinants are significantly influencing the capital structure decision of the firms, particularly in the property sector in Malaysia. Those determinants are tangibility, profitability, interest coverage ratio, quick ratio, Z-Score, market-to-book ratio and efficiency. Generally, the findings support both trade-off theory and pecking order theory for Malaysian Shariah-compliant property firms. It is recommended that future research on the capital structure should include different sectors in the research.

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