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The Impact of Bond Market on Capital Structure Determinants among the Listed Construction Firm in Malaysia

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Abstract

In Malaysia, the construction sector is one industry that help in improving the economy and also the country's development. The construction sector is related to the success of any economy. On the other hand, it can serve as a kind of economic catalyst for developing and developed economies. It is because this sector plays a very important role in providing a better quality of life and wealth to the country. most contractors do not have sufficient capital, fixed assets and they are usually pretty self-construction equipment from the land or building to finance their businesses. Moreover, banks do not accept these assets as collateral acceptable to move the loan. Because without bank financing, the contractor will clearly find it more difficult to carry out their projects. This study contributes to the existing literature by addressing two important aspects as the body of knowledge and policy implications. Because most of the literature in the past focused on developed countries, this study fills the gap by providing new insights with regard to corporate financing decisions in the context of emerging markets. In addition, capital structure decisions is different because of different characteristics in all sectors. Thus, this study provides new empirical evidence and a better understanding of the capital structure of companies in the construction sector in Malaysia. This study used quantitative research method. A quantitative research is regularly associated with a deductive approach. This study based on secondary data extracted from various sources especially from Malaysia Stock Exchanges starting 2000 until 2015. As of March 2016, there was 36-Construction firms listed on the

Keywords: Bond Market, Capital Structure, Malaysia, Stock Exchange.

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INTRODUCTION

Capital structure is how a firm finances its overall operations and growth by using different sources of funds. Capital structure in financial term means the way a firm finances their assets through the combination of equity, debt, or hybrid securities (Saad, 2010). Furthermore, (Modigliani and Miller, 1958) have examined the capital structure and the firm value which unaffected by capital structure. The diversity of the capital structure patterns is explained by various theories and have been tested using various assumptions. Besides that, balancing the benefits and cost of debt financing has shown optimum point in capital structure (Modigliani and Miller, 1963). However, conflict of interest between shareholders and managers will reduce due to optimum level in capital structure (Jensen and Meckling, 1976). In a subsequent study, (Myers and Majluf, 1984) indicates the order of priority for the use of capital by firms to finance their investment, where the source of the most desirable funds will be internal funds, followed by debt financing, while equities will be the last option for firm. Descriptive Analysis is the term that research use to analyze of data that helps describe, show or summarize data in a readable data.

Based on Securities Commission Malaysia (2011), the market capitalization of the stock and bond markets both grew annually by about 11% between 2000 and 2010. The investment management industry and Islamic capital market also enjoyed double-digit growth

in the period. In addition, formulated following the Asian financial crisis and launched in 2001, the Capital Market Masterplan (CMP1) draw up a steady market growth until 2010. Besides that, the bond market is Asia's third-largest, compared with GDP, plus Malaysia's sukuk market is leading with almost 70% of the global total. The local unit trust industry is the largest in the ASEAN region, and a number of Islamic unit trust industry in the world is in Malaysia (Deepening the Capital Market, 2013).

On the other hand, Islamic bond are securities that are creative and innovative financial structures resembling conventional bond securities in terms of risk and cash flow but independent of the elements deemed to be prohibited by reference to Islamic principles (Iqbal, 1997); and (Iqbal and Mirakhor, 2011). Furthermore, (Iqbal and Mirakhor, 2011) have defined sukuk as participation rights in the underlying assets. According to (Alam et al., 2013) sukuk has emerged as one important component in the global Islamic financial system and seen about 10% - 15% growth rate to reach US \$170 billion portfolio outstanding at the end of the 3rd quarter in 2011 (Global Sukuk Report, 2011). It accounted for about 14.3% of the global Islamic financial assets. Besides that, the emergence of Islamic banking and finance industry in modern countries, especially in the Arabian Gulf and some Southeast Asian countries reflects the effort to create a financial system semi-independent under the current system. Apart from the basic Islamic concepts underlying sukuk structure is



different, the contract is usually patterned after conventional bonds (Raei and Cakir, 2007).

In particular, the construction firm does not necessarily financially strong because of their tendency to rely on borrowed capital, which can be regarded as the direct cause of the financial problems the corporate level (Severson et al., 1993). Moreover, uncertainty of production systems and long project timelines caused by the characteristics of the construction industry is known to cause a lot of difficulties in the management of the firm (Abidali and Harris, 1995) and (Lee et al., 2013).

Financial problems faced by the contractor is also due to the low profit margin of the project. Although the structure is the best way to ensure the completion of any project with the lowest price, it is the most difficult of any contractor will have obstacles in this highly competitive world (Baharuddin et al., 2011). The study by (Affandi et al., 2012)(Mansor Wan Mahmood and Zakaria, 2007) found that developers in Malaysia is bigger and more profitable than the contractors and their study shows that the contractors are burdened with debt and the need to pay the debt is very high

Therefore this study intends to fill the gap by analysing the impact of bond market on capital structure determinants among the listed construction firm in Malaysia, acknowledging its ability to offer alternative leverage financing intermediary in investment projects.

The study focuses on the construction sectors based on the listed firms in Bursa Malaysia. The sample used in this study is about whole population and uses data of firms listed on the Bursa Malaysia for period from 2000-2015. The analysis covers fifteen years data from 2000-2015. The fifteen years period of study is sufficient to analyse the changes and trend of a firm. This studies investigating the relationship between impacts of bond market on capital structure determinants.

The main objective of this study is limited to determining the capital structure and the effect of the bond market in the context of the Malaysian construction firms in the period 2000-2015. This study has clear boundaries and is expected in the amount of data that will be used, because the researchers only use data from the balance sheet and income statement in the period. This thesis is focused on the issues raised in the survey questions. This study is based on secondary data collected from Bursa Malaysia.

LITERATURE REVIEW

The capital structure is an important component of the financing decisions at the firm level and has become a conventional theme of corporate finance. In order to maximize the firm value, capital structure must be set by the management of the firm itself. Thus, it show the competency of firm to carry out the stakeholders' needs.

A large amount of literature has been published on the capital structure. These studies have found various theories to distinguish the capital structure of a firm judgment. Due to these theories, the first section will discuss the traditional approach versus MM theory, equilibrium theory, the theory of the selection of players and the agency cost theory. In the second part will discuss the determinants of capital structure by dependent and independent variable, such as firm size, risk, liquidity, growth opportunities, and tangibility, profitability, and non-tax debt shields. In same time look forward bank market development. The third part will deliberate the findings of previous studies related to the impact of bond market on capital structure and go through capital market masterplan (CMP) 2000-2010. Therefore, the last part will highpoints theoretical framework that implemented in this study.

As the firm increases debt, financial costs and risk of bankruptcy also increased, eventually reaching equilibrium. Besides that, (Bradley et al., 1984) concluded that the debt levels are inversely related to the cost of financial risks, including the risk of bankruptcy and agency costs. Recently, (Xu Jin, 2012) rely on the same theory to assess the impact of the expected future returns on the capital

structure of companies in the domestic industry in the United States, subject to increased import competition.

Furthermore, the pecking order theory is also referred to as asymmetric information theory articulated by (Myers, 1984) considers three sources of funds available to the company, which retained earnings, debt, and equity. This theory suggests that a relationship exists between profitability and capital structure as a profitable company tend to be more dependent on the financing of retained earnings.

Two theories explain the existence of market behaviour by firms. The first thought to be a rational economic agents, where firm considered equity issued directly after the statement is positive and reduce information asymmetry problem between management and shareholders. The decline in information asymmetry coincided with an increase in the share price, thus, firms create their own time (Lucas and McDonald, 1990); (Korajczyk et al., 1992). The second theory assumes that economic agents to be irrational because there is no rational mispricing of time varying from firm stock (Baker and Wurgler, 2002). Furthermore, this study also examines the development of the bond market to see the impact on leverage.

However, according to research by (Md-Yusuf et al., 2013), and (Baharuddin et al., 2011) in Malaysia, the size of firm is positively related to the total debt. Furthermore, (Haron and Ibrahim, 2012) highlighted that positive relationship between the size of firm and long-term debt, but, negative relationship between size of firm and short-term debt (Saarani and Shahadan, 2013), and (Ramakrishnan, 2012).

 $\textbf{Hypothesis 1:} \ \ \text{There is negative relationship between firm size} \\ \ \text{and short-term debt}$

Hypothesis 2: There is positive relationship between firm size and long-term debt

Hypothesis 3: There is positive relationship between firm size and total debt

Volatility also known as firms risk is a delegation of probability bankruptcy and it is usually predictable to be negatively related with leverage. However, as (Huang, 2002) proposed based on discoveries of (Hsia, 1981): "The systematic risk of equity decreases when the variance of the value of the firm's assets increases. Hence the firms risk is likely to be positively related to leverage." The growing firms have enough internal funds for financing needs but, it tend to be more risky, thus it choose to use less debt (Buferna et al., 2005). Firms with stable income will face lower risk and increase the efficiency of working to pay the debt, but investors will less confident with the firm, so it tend to increase the risk of bankruptcy.

Besides that, risk is not substantial among Chinese listed firms because it positively linked to long-term debt but negatively linked to leverage (Chen, 2004). Conversely, firms in Pakistan, the risk is positively correlated to short-term debt and negatively correlated to long-term debt (Shah and Khan, 2007). Research by (Bauer, 2004), (Al-Najjar, 2011), and (Alzomaia, 2014) has provision on pecking order and trade-off theories where the risky firms will decrease the

leverage. Therefore, (Bauer, 2004) and (Tornyeva, 2013) proposed the positive connection between risk and leverage with minor effects on the capital structure firm.

On the other hand, when firms in Malaysia notice the riskier, instantly will lessen the total debt (Deesomsak et al., 2004) and (Pandey, 2004) and (Haron, 2014). Regarding to (Pandey and Chotigeat, 2004) and (Ramakrishnan, 2012), the risk is positive associated with long-term debt, and negatively associated with total debt and short-term debt.

Hypothesis 1: There is negative relationship between risk and short-term debt

 $\begin{tabular}{ll} \textbf{Hypothesis 2:} & There is positive relationship between risk and long-term debt \end{tabular}$

Hypothesis 3: There is negative relationship between risk and total debt

Liquidity is an asset or security that can be quickly bought or sold in the market without moving the cost price. There are two type of



liquidity; market liquidity and accounting liquidity. Markey liquidity allows assets to be bought and sold at stable prices in a country's stock market or a city's real estate market. Meanwhile, accounting liquidity measures the firms at ease to meet financial requirements with available liquid assets. Furthermore, trade-off theory estimates a positive relationship between liquidity and leverage (Ahmed Sheikh and Wang, 2011). Firms with high liquidity favour debt financing because liquid asset can be guarantee for firms to apply for loans.

However, firms in Malaysia is negatively correlated to long-term and total debt (Haron and Ibrahim, 2012); (Wahab, S. N., & Ramli, 2014) and (Haron, 2014). In addition, (Saarani and Shahadan, 2013), and Ramakishnan (2012) emphasized the negative connection among liquidity and short-term leverage.

Hypothesis 1: There is negative relationship between liquidity and short-term debt

Hypothesis 2: There is negative relationship between liquidity and long-term debt

 $\begin{tabular}{ll} \textbf{Hypothesis 3:} & \textbf{There is negative relationship between liquidity} \\ \textbf{and total debt} & \end{tabular}$

Besides that, based on research conducted by (Haron and Ibrahim, 2012), (Saarani and Shahadan, 2013), and (Haron, 2014) initiated that relationship growth with long and short term debt is negative but positive with total debt. This is because total leverage level will increase by high growth firms (Baharuddin et al., 2011); (Wahab et al., 2012) and (Md-Yusuf et al., 2013).

Hypothesis 1: There is negative relationship between growth and short-term debt

Hypothesis 2: There is negative relationship between growth and long-term debt

Hypothesis 3: There is positive relationship between growth and total debt

Besides that, research in Malaysia by Affandi et al. (2012), (Md-Yusuf et al., 2013) and (Wahab, S. N., & Ramli, 2014) initiated that tangibility will increase when firms use more debt. Although, firms with high tangibility will obtain more long-term debt and condense short-term debt (Ramakrishnan, 2012) and (Saarani and Shahadan, 2013).

Hypothesis 1: There is negative relationship between tangibility and short-term debt

Hypothesis 2: There is positive relationship between tangibility and long-term debt

Hypothesis 3: There is positive relationship between tangibility and total debt

Based on trade-off theory, when firms are profitability, they should prefer debt to benefits from tax shield. Therefore, there is positive relationship between profitability and leverage. In the context of information asymmetry, an increase in debt ratio of profitable firms indirectly reflects the quality of financial management amongst investors. It is prove that most of the profitable firms are more prefer to lower risks of bankruptcy. It gave greater incentive to employ debt to exploit the interest tax shield. In Malaysian context, (Hochwarter, W. A., Kacmar, C., Perrewé, P. L., & Johnson, 2003) found that firms with highly profitable tends to issue debt. It also support by (Fraser et al., 2006).

According to the pecking theory, a negative significant relationship exists between profitability and leverage. Majority of studies witnesses a negative relationship between the profitability and leverage such as (Lemmon et al., 2008) and (Ramakrishnan, 2012).

Hypothesis 1: There is negative relationship between profitability and short-term debt

Hypothesis 2: There is negative relationship between profitability and long-term debt

Hypothesis 3: There is negative relationship between profitability and total debt

It supported from a study by (Wiwattanakantang, 1999) found similar results across Thai firms and concluded that non-tax debt shield could be a substitute for debt. In contrast, a positive association between non-tax debt shield and leverage also found by (Wald, 1999).

Other studies by (Booth et al., 2001) also highlighted that tax is negatively correlated with leverage in Asian firms, which indirectly indicates that non-tax shield is positively correlated with leverage. Even though, there are positive relationships but most of the studies found in contrast.

Hypothesis 1: There is positive relationship between non-tax debt shield and short-term debt

Hypothesis 2: There is negative relationship between non-tax debt shield and long-term debt

Hypothesis 3: There is negative relationship between non-tax debt shield and total debt

Table 1. Summary of Empirical Evidence on Capital Structure Determinants

| Determinants | Theory | Relationship | | | |
|-------------------------|----------------------|--------------|--|--|--|
| Firm Size | Trade-off theory | Positive | | | |
| FIIIII Size | Pecking order theory | Negative | | | |
| | - | Positive | | | |
| Risk | Trade-off theory and | t | | | |
| | Pecking order theory | Negative | | | |
| Liquidity | Trade-off theory | Positive | | | |
| Liquidity | Pecking order theory | Negative | | | |
| | Pecking order theory | Positive | | | |
| Growth | Trade-off theory and | | | | |
| | Agency cost theory | Negative | | | |
| Tangibility | - | Positive | | | |
| rangionity | - | Negative | | | |
| Profitability | Trade-off theory | Positive | | | |
| Tiontability | Pecking order theory | Negative | | | |
| Non-Tax Debt Shield | - | Positive | | | |
| Non Tax Debt Silleid | Trade-off theory | Negative | | | |
| Bond Market Development | Market Timing Theory | Positive | | | |
| Bond Warker Development | Trade-off Theory | Negative | | | |

Besides that, there are a lot research has been done on the impact of bond market development on leverage. Regarding to (Faulkender and Petersen, 2005), firms with greater access to bond market have significantly more leverage. Moreover, (De Jong et al., 2008) recommend a positive relationship between bonds market development and firm leverage. Firm leverage tends to be higher when bond market in a given country is highly developed making issuing and trading these bonds easier. Conversely, (Kayo and Kimura, 2011) found a negative relationship between bond market development and leverage firms.

Today, a frictionless capital market firms are always able to get funding for projects with positive net present value. Regarding to (Stiglitz and Weiss, 1981), firms may not be able to raise enough capital to fund all of their good projects because the presence of information asymmetry in which the firm's quality and the quality of its investment projects cannot easily be assessed by outside lenders. Furthermore, (Carey et al., 1998) stated that lenders as financial intermediaries is specialize in collecting information about borrowers, which use in the credit approval decision. Hence, the financial intermediary may be able to manipulate the information asymmetry that causes the market's failure by cooperating with borrowers.

Second, foreign impetus is to increase the capacity, competitiveness and resilience of the domestic financial sector in anticipation of further international liberalization. The government decided that a clear framework is needed to guide the orderly and effective deregulation and liberalization of capital markets, and to identify and pursue areas of strategic competitive advantage that can be exploited at the international level (the Securities Commission Malaysia, 2001).

In 2001, the government introduced the Capital Markets Plan (CMP) to further enhance the Malaysian capital market. According to (Ramakrishnan, 2012), there are three different phases of the objectives of the CMP. The first phase (2001-2003), the initial plan was to strengthen domestic capacity and develop strategic and emerging sectors. The next phase (2004-2005), gradually liberalize market access and emphasizing the strengthening of key sectors. The

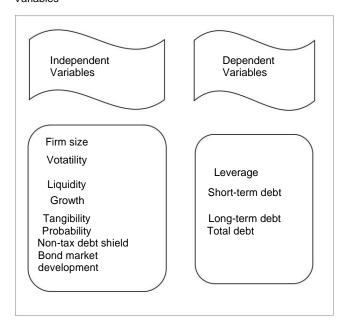


final phase (2006-2010) focusing on expanding and strengthening the process and market infrastructure to be completely developed capital markets. Thus, CMP implementation has gradually improved over the Malaysian capital market.

More than forty years ago, Malaysia has been transformed from a commodity-based economy of the rural population to the point of manufacturing and trading centre. Beginning in the 1970s, the government adopted a strategy of export growth, the same as that of Japan, South Korea and Taiwan. According to (Woodsome, 2016), the initial focus of capital market development formalizing the equity markets, which dated the colonial era, as a source of non-bank financing to the private companies. The bond market was driven by the issuance of government bonds as a precondition for creating a sovereign yield curve and investors need for the development of corporate bond market (Securities Commission Malaysia, 2011).

Diagram 1 presenting the theoretical framework of the research. The independent variables is determinants of capital structure, namely firm size, volatility, liquidity, growth, tangibility, profitability and non-tax debt shield, where affected by dependents variable, likely short-term and long-term debt, and total debt.

Diagram 1. Theoretical Framework on Independent and Dependent Variables



Capital structure theories commence with research by Modigliani and Miller which involved trade-off theory, pecking order theory and agency cost theory. Various observation by analyst on capital structure determinants to achieve further thoughtful of the capital structure of firms and impact of bond in capital structure verdicts.

METHODOLOGY

This chapter gives an explanation on the methodology employed in the study. The first section provides an introduction of the research design. Section two focuses on the data sources and classification of the data sets that were used in this study, while the definition of the dependent and independent variables. The next section focuses on hypotheses of the study, followed by discussion on descriptive statistics and correlation matrix analysis. The final section emphasizes the model specifications and estimations that describe the static model, including the pooled OLS analysis and the fixed effect analysis.

This study used quantitative research method. A quantitative research is regularly associated with a deductive approach, where the focus on use data to test a theory (Saunders et al., 2012). Besides that,

it also observes the connection between variables through a data analysis procedure that uses numerical data. Basically, there are two types of data, which are primary and secondary. Primary data is the information collected specifically for purpose of the study. Second data is the data that has already collected and can obtained from publicly available database. Thus, this study used secondary data that encompassed the financial ratios of firms in the construction sector. Regarding to (Saunders et al., 2012), the secondary data may lead to unexpected new discoveries.

This study based on secondary data extracted from various sources especially from Malaysia Stock Exchanges starting 2000 until 2015. As of March 2016, there was 36-Construction firms listed on the Burs Malaysia. The firms level variables data were obtained from data stream by Routers. These data were obtained and based on the firms audited financial statements such as, statement of financial position and income statements, denominated in Malaysia Ringgit for a fifteen-year period starting from 2000 until 2015. Other than that, all the data regarding to the selected company were obtained from Bursa Malaysia website by downloading their financial report to find out proportion of shareholder. According to (Decloure, 2007) and (Ariff et al., 2008), the accuracy and quality of measurement of the variables were relying on the independent auditing report.

Descriptive Analysis is the term that research use to analyze of data that helps describe, show or summarize data in a readable data. According to (Elifson et al., 1998), a descriptive analysis known as systematize in presenting data in functional summary form. Figure for mean, minimum, maximum and standard deviation were compute using Gentl to enable for further study.

Mean also known as arithmetic average, where it measure of central tendency appropriate for interval level variables. Mean of each variable in each intervals as value for analyzing the data and for comparing the distribution and the evolution over time of each variable (Vitiello, 2009). On the other word, the mean or the arithmetic average is a measure of central tendency appropriate for interval level variables (Fielding and Gilbert, 2006). It allows comparing groups on the basis of the amounts of characteristics possessed by the group relative to its size. The arithmetic mean is calculated by summing all the values of the observations and then dividing by the number of observations.

RESULTS AND FINDINGS

Table 2 shows the mean, standard deviation, minimum, maximum and the number of observations for the leverage and firm-determinants. This descriptive statistics is based on 36 construction firms in Malaysia. The result shows that investment capital is primarily financed by short-term debt. The percentage is mostly prompted from long-term debt rather than total debt. This is because Malaysia's private sector largely depend on short-term debt (Tan, 2007). Furthermore, liquidity has the highest mean followed by firm size and growth opportunities. Besides that, standard deviation shows that long-term debt has highest volatility followed by total debt and short-term debt. The liquidity has the strongest average and highly volatile within the firms in construction sector. This can be determine that firms commonly liquid the asset as collateral to leverage.

Table 2. Descriptive Statistics of Firm-level Determinants

| Variable | Mean | Std. Dev. | Minimum | Maximum | Obs |
|----------|----------|-----------|----------|----------|-----|
| LTD | 2.58057 | 5.95754 | 0.00000 | 6.90663 | 482 |
| STD | 7.75163 | 1.04425 | 0.00000 | 7.06876 | 482 |
| TD | 1.33447 | 2.29583 | 0.18099 | 2.48371 | 482 |
| LNSALES | 6.84329 | 1.49682 | 0.00000 | 9.23354 | 482 |
| EBITTA | 3.10915 | 2.05944 | -8.15637 | 1.76922 | 482 |
| LIQ | 7.35366 | 42.1443 | 0.00000 | 671.370 | 482 |
| TANGIB | 0.167751 | 0.210169 | 0.00000 | 0.860611 | 482 |
| MTBR | 4.98023 | 1.81014 | -1.81097 | 3.23301 | 482 |



| NTDS | 0.0957192 | 0.135352 | 0.00000 | 1.00000 | 482 | |
|-------|-----------|-----------|------------|----------|-----|--|
| RISK | 0.0331168 | 0.0290366 | 0.00502749 | 0.375950 | 482 | |
| LNBMD | 3.24447 | 2.09769 | 0.00000 | 8.04211 | 482 | |

The table shows the mean, standard deviation, minimum, maximum and number of observation for leverage and firm-level determinants across construction sector. The overall sample consists of 481 firm-year observations from 2000-2015. The dependent variable are book leverage ratios (short-term debt to total asset (STD), long-term debt to total asset (LTD) and total debt to total asset (TD)). The independent variables are firm size (LNSALES), profitability (EBITTA), liquidity (LIQ), tangibility (TANGIB), growth opportunities (MTBR), non-tax debt shield (NTDS), business risk (RISK) and bond market development (LNBMD). Refer to Table 3 for all variables definitions.

Table 3 shows the result of correlation matrix that firm size is negative and significant correlated to risk, liquidity, tangibility and non-tax debt shield at 5% level. However, risk has positive relationship with liquidity, growth, tangibility, non-tax debt shield and bond market development. The liquidity has significance positively relationship with non-tax deb shield, while, negatively relationship with profitability, tangibility and bond market development. The growth significance relationship is positive with profitability and tangibility but negatively to non-tax debt shield and bond market development. Furthermore, profitability is negatively related and strongly significant to non-tax debt shield at 5% significance level. The tangibility has positive significant relation with bond market development. Besides that, non-tax debt shield shows that negative insignificant relationship with bond market development.

Table 3. Correlation Matrix of Firm-level Determinants

| Tubic o. | LNSAL | RIS | X 01 1 11 | MTB | EBIT | TANG | NTD | LNBM |
|-------------|--------|-----------|------------|------------|------------|------------|-----------------|---------------------|
| | ES | K | LIQ | R | TA | IB | S | D |
| | | - | - | | | - | - | |
| LNSAL ES | 1.0000 | 0.01 | 0.06 54 | 0.04 | 0.202 | 0.045 | 0.12 50 | 0.093 |
| RISK | | 1.00 0 | 0.05 85 | 0.01 82 | 0.001 8 | 0.080 3 | 0.05 19 | 0.043 5 |
| LIQ | | | 1.00 00 | 0.00 28 | 0.020 5 | 0.011 5 | 0.04 87 | 0.015 8 |
| MTBR | | | | 1.00 00 | 0.053 4 | 0.068 5 | 0.02 08 - | 0.029 4 |
| EBITTA | | | | | 1.000 0 | 0.204 2 | 0.08 40 - | 0.012 2 |
| TANGI B | | | | | | 1.000 0 | 0.34 65 | 0.062 5 - |
| NTDS | | | | | | | 1.00 00 | 0.000 9 1.000 |
| LNBMD | | | | | | | | 0 |

*Significance level at 5% critical value (two-tailed) = 0.0893 for n = 482

The table show the correlation matrix between leverage and firm-level determinants across construction sector. The sample consists of 482 firm-year observation from 2000 to 2015. The independent variables are firm size (LNSALES), profitability (EBITTA), liquidity (LIQ), tangibility (TANGIB), growth opportunities (MTBR), non-tax debt shield (NTDS), business risk (RISK) and bond market development (LNBMD). Refer to Table for all variables definitions

The leverage are total debt (), long-term debt () and short-term debt (). The firm-level determinants are tangibility (TANGIB), profitability (EBITTA), growth opportunities (MTBR), non-tax debt shield (NTDS), liquidity (LIQ), firm size (LNSALES), risk (RISK) and bond market development (LNBMD). The disturbance term is donated as ϵ and assumed to be serially uncorrelated with mean zero.

Table provide the explanatory overall variable across leverage. The result shows that firm size is significant positively related to leverage at 1% level. Thus, hypotheses H1 and H3 are fail to reject. Furthermore, risk is positively related to long-term debt and short-term debt but negative relationship with total debt at insignificant level, although it is contrary to hypotheses H5. Thus, hypotheses H4 and H6 are do not rejected.

The findings of the present study suggested that tangibility and profitability is significant to leverage. The tangibility is negatively significant related to short-term debt at 5% level, while long-term debt and total debt positively significant at 1% level. Hence, the proposed hypotheses is fail to reject. Moreover, profitability is positively significant related to long-term debt and total debt at 1% level, while short-term negatively significant at 5% level. Hence, hypotheses H17 and H18 are rejected.

Nevertheless, the relationship between liquidity, growth and non-tax debt shield with leverage is not significant in this study. However, the finding shows that liquidity is positively related to leverage, although the proposed hypotheses is rejected. The growth is negatively related to short-term debt and total debt, but positively related to long-term debt. Thus, hypotheses H11 and H12 are rejected and H13 is not reject H13. In addition, non-tax debt shield has negative relationship with short-term debt and total debt, while positive relationship with long-term debt. Thus, hypotheses H19 and H20 are rejected and H21 is not rejected.

Besides that, the study has found that bond market development also has insignificant value. The bond market development is positive relationship with long-term debt and short term debt which contrary to proposed hypotheses. However, it is negatively related to short-term debt. Hence, hypotheses H22 is fail to reject but H23 and H24 are rejected.

Therefore, the data analysis result of the present study advocated that firm size is the most important determinants that influence leverages with significant at 5% level, while bond market development is insignificant to leverage and has the least impact on short-term debt. Furthermore, profitability and tangibility also significant to long-term debt and short-term debt.

Three leverage are total debt (), long-term debt () and short-term debt (). The firm-level determinants are tangibility (TANGIB), profitability (EBITTA), growth opportunities (MTBR), non-tax debt shield (NTDS), liquidity (LIQ), firm size (LNSALES), risk (RISK) and bond market development (LNBMD). The firm fixed effect μ control for cross-sectional differences in the firm characteristic. The disturbance term is donated as ϵ and assumed to be serially uncorrelated with mean zero.

The results of fixed effect analysis between leverage and firm-determinants are shown in the Table. There are no big different between fixed effect analysis result and pooled OLS model. The firm size remain positively significant with leverage, but long-term debt is significant at 5% level. The short-term debt and total debt is remained same as OLS model.

Besides that, the profitability also remain significant with leverage, but short-term is significant at 1% level. Furthermore, tangibility is no significant with total debt, while short-term debt significant at 1% level. Hence, both long-term debt is remain same as OLS model.

In addition, the results indicated that the non-tax debt shield is significant with short-term debt and long-term debt at 1% level. Nevertheless, the positive relationship is found in this analysis between growth and short-term debt, but no significant. On the other hand, others variable analysis is remain same as pooled OLS model.

Therefore, firm size is the most impactful determinants to the long-term debt, while growth is the key determinants that influenced the short-term debt. Non-tax debt shield also give influence to long-term and short term debt. The tangibility and profitability has a lease impact on leverage.

DISCUSSION AND CONCLUSION



Based on the findings, the significant positive relationship between size and leverage suggests that firms are following the trade-off theory. In pioneer research, larger firms able to tolerate with high leverage because more diversified and lower variance of earnings, while it is common for small firms to depend on internal funds because available funds are quite limited (Kilani, 2012). This shows that construction firm in Malaysia evaluate the benefits and costs associated with different financing alternatives and concluded that firms increase their debt while increasing the tax benefits which in turn, should increase the value of the firm itself. Thus, as the firm increases debt, financial costs and risk of bankruptcy also increased, eventually reaching equilibrium (Myers, 1984).

Furthermore, the significant positive relationship between profitability with long-term debt and total debt has proved that most profitable firms are more prefer to lower risks of bankruptcy. Hence, when firms are profitability they should prefer debt to benefits from tax shield which confirming trade-off theory (Fraser et al., 2006). However, short-term debt has significant negative relationship with profitability.

It is support the pecking order theory suggests that a relationship exists between profitability and capital structure as a profitable company tend to be more dependent on the financing of retained earnings. This result is consistent with findings (Lemmon et al., 2008) and (Ramakrishnan, 2012) which the firms will utilize their external funds as the first option before looking for external financing. This shows that construction firms in Malaysia will raise their debts only if they are in condition with low profitability and fund.

Moreover, tangibility is negatively significant correlated to short-term debt, while positively significant correlated to long-term debt and total debt. This result was confirmed by (Proença et al., 2014) and (Nishat, M., Shaheen, R., & Hijazi, 2004). It shows that firms issue debt secured by collateral may diminish asymmetric information related in cost of financing. Instead, they prefer to use their current assets ad collateral to raise the short-term debt. A possible explanation is construction firms will match their assets with their liabilities. According to (Bassey et al., 2014), high tangible assets reduce the magnitude of debt loss incurred by lenders should the firm default. Therefore, firms will used their long term assets and collateral with long-term and total debt.

On the other hand, the present study found that significant positive relationship between non-tax debt shield and long-term debt, but negatively significant related to short-term debt. This is reliable with the finding of (Ramakrishnan, 2012) and (Proença et al., 2014) which non-tax debt shield provide collateral value for the attainment of secured debt. Thus, it is also prove that construction firm in Malaysia mostly used long-term debt as capital financing.

Therefore, the significant determinants of capital structure within the construction sector in Malaysia are firm size, profitability, tangibility and non-tax debt shield. Even though the finding shows that liquidity has positive relationship with leverage but there are no significant.

RECOMMENDATIONS

The capital structure is the most interesting topic to be discussed in field of finance. Thus, to make it more reliable, future research should concentrate on investigating the corporation of the market value of leverage and comparing it with the book value of the leverage in order to test the deviation of the result. Besides that, a longer period could be tested to give a real explanation of sector behaviour. A comparative analysis of capital structure across sectors would provide insights for policy makers and banking institutions.

This study highlights the impact of bond market on capital structure determinants among the listed construction firms. Based on pooled OLS and Fixed Effect Analysis result, all the determinants have a significant relationship with leverage except for growth, risk, liquidity and bond market development. Furthermore, the firm size is

impactful independent variables to the capital structure of firms, while liquidity give impact to dependent variable. Finally, the results are broadly consistent with the prominent capital structure theories.

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