

The Impact Of Capital Structure On Financial Performance Of Malaysian Public Listed Construction Firms

Sharifa Hashim, Hafinaz Hasniyanti Hassan

Asia Pacific University of Technology and Innovation, School of Accounting and Finance,
Technology Park Malaysia, Bukit Jalil, 57000 Kuala Lumpur, Malaysia
sharriffa@hotmail.com

Asia Pacific University of Technology and Innovation, School of Accounting and Finance,
Technology Park Malaysia, Bukit Jalil, 57000 Kuala Lumpur, Malaysia
hafinazhassan@gmail.com

Abstract: The topic of capital structure has been widely explored among the literature. Many studies have tried to identify the optimum capital structure that would allow profit maximization for companies. However, with capital structure, there have been many divergent findings due to different sectors exhibiting different behaviors and model that attempt to establish relationship between capital structure and performance. This research therefore, seeks to identify the impact of capital structure on profitability of 36 publicly listed construction firms in Malaysia in the year 2011- 2015. The objective of this study is to determine the impact and significance of capital structure on profitability, the relationship between DA with ROE, ROA and NPM and the relationship between DE with ROE, ROA and NPM. The researcher uses secondary data from audited financial statements of construction firms published in Bursa Malaysia Stock Exchange site. Quantitative methodology using random sampling was employed and the data collected were analyzed using excel and E-views 7 econometric software to come up with descriptive, regression and correlation results. The significance of data was measured using normality test and related, correlation, autocorrelation, multicollinearity and heteroscedasticity of the data was investigated to check the significance of the model. The findings revealed that capital structure impact's financial performance of construction firms. whereby the impact was significant with DE and not significant with DA as per p-value of the coefficient of correlation. The findings also showed a negative relationship between DA and DE with ROE, ROA and NPM.

Keywords: capital structure, construction firm, financial performance, profitability

1. Introduction

Surely, every entity requires finances in order to facilitate their operations, regardless whether it is newly formed or has been operating for a long time. The significance of funds in business cannot be underestimated, as it crucial for any successful operation. Many firms require funds to facilitate their expansion or provide working capital for day to day operation. This kind of financing needed is referred to as capital. In real life capital can be generated internally or externally. Internally generated funds are usually obtained from retained earnings and doesn't render an obligation in any form. However, for the externally generated capital, entities are faced with a burden of having to reimburse creditors and shareholders, through interest payment, dividend payment, value creation and profit maximization (Chechet & Olayiwola, 2014). Shubita & Alsawalhah (2012) defined capital structure as a combination of equity and debt, which firms employ in order to facilitate their operations. A firm can choose to raise funds by issuing stocks, debt, or other accessing it from sources of financing such as: convertible bonds, warrant, forward contract, overdrafts etc. Since capital structure impact wealth maximization as well as the ability of a firm to sustain in a competitive market, making the right capital mix decision is paramount. Nevertheless, the identification an effective capital structure has proven to be a difficult task for many firms. The difficulty arises from the challenges encountered in quantifying generating a model which will deliver accurate result for optimum capital structure (Koech, 2013). For this reason, the issue of capital structure has been attracting keen attention from key industrial players such as analysts, investors and company officers. The attraction stems from

the fact that capital structure decisions are crucial in financial management. Not only does capital mix affect the profitability of an organization, but also, it's vital in sustaining the going concern status of companies, in period of financial crisis. With the eruption of financial crisis at an international level, many underperforming corporations have had to deal with financial stress encompassing both the local and international market. At the same momentum, the availability of debt has drastically shrunk and risk exposure has amplified throughout the years, which has led to the increase in cost of capital; a burden that many firms are trying to get rid of. This has therefore placed immense pressure on firms as they try to come up with corporate structure that would address the issues, and bring maximum returns to shareholders (Martis, 2013). In summary, funding strategy, capital mix and entities ownership are interrelated and impact the ratio of ROE and ROA (Salawu & Awolowo, 2009). Hence, in this study, the researcher attempts to define the impact of capital structure on profitability of Construction companies listed under Bursa Malaysia Security Commission in Malaysia.

2. Problem Statement

Different theories have been developed to try and explain the behaviour of firms in choosing different capital mix to fund company's operations. On such theory is the Pecking Order Theory. The theory claims that companies tend to issue stock when they can fetch high value in the market (overvalue). Alternatively, no issuance of equity is done when shares are undervalued, except where the price of shares goes from old to new stockholders. Also, where authorized share capital is exhausted or external funds is inevitable, debts may be

considered (Shubita & Alsawalhah, 2012). Despite attempting to define what triggers corporate structuring strategy, the Pecking order hypothesis is developed under the supposition that managers tend to act discretely with the best interest of stockholders in mind, which is not the case in reality. Secondly is the Trade-off theory. According to this theory, there is always an ideal capital mix for individual corporations and can be attained by optimizing cost and return of debt. The agency theory, is another theory, which was established by Berle and Means. According to them, the constant shrinkage of equity ownership of firms, ownership and control becomes more divided, when equity is used, thereby enabling managers to act in their own interest instead of the interest of stock holders. Meaning capital decisions are oriented to benefit managers rather than shareholders. Jensen and Mackling in the year 1976, in their theory, recommended that an ideal debt level in capital structure could be obtained; by diminishing the agency costs rising from the conflicting interest of agent (managers) with stockholders and bond holders (Akeem et al., 2014). Despite having these theories, the issue of capital structure still remains vague. The topic has therefore been given utmost attention as many strive feel the gap existing in the literature and try to determine how the value of a firm can be greatly improved by making proper corporate structure decisions. This has prompted many study to be done to ascertain the actual weight and impact of capital mix on firms. In addition, many studies have also been done to investigate other areas affecting capital structure such as: least capital ratio for financial intermediaries and leveraged buy-outs (LBOs). In particular, the exploration for ideal capital mix that capitalize on firm's wealth and stockholders value has been widely covered (Muhammad et al., 2014). Nonetheless, as Muhammad et al., (2014) points out, even with already developed model, one can't limit firms and expect them to utilize an all- round theory, as there are other factors that are specific to different corporations and would affect firm's behavior in a specific manner. As a result, each firm, sector or nation is diverse and have dissimilar prompting factors. Hence, the models developed by previous literatures provide only a partial understanding about optimal capital structure. This is what has created a need to develop and tailor models in a manner that would correspond to a particular industry that operate in a specific political environment.

3. Research Objectives

The purpose of embarking on this research is to achieve the following objectives:

- To examine the impact of capital structure on construction firms' performance.
- To detect the nature of relationship between capital structure and construction firm profitability.

4. Literature Reviews

4.1 Capital structure

Capital structure defines the manner with which company makes its financing decisions, by choosing among the alternative source of financing such as securities, equity and debt (Velnampy & Niresh, 2012). Capital structure, constitute a significant factor that influences firm's profitability. This is because, since cost of bankruptcy exists, further use of debt financing can result to a reduction in yield, even though the use of debt is intended to benefit the

company through tax benefits. As such, when capital structure is not at optimum level, the use of excessive debt financing will increase the cost of bankruptcy, at a level which higher than the marginal tax cushioning benefits that comes with the replacement of equity with debt (Zeitun & Tiana, 2007). The influence of debts on profitability can be observed using three theories which includes: tax theory, agency cost theory and signaling theory. The signaling theory states that where information is availed, then debt should have a positive significant impact on company's performance. The agency theory, on the hand states that debt can have two different effect on profitability, both negative and positive. The positive effect occurs where there is an agency cost between principle and agent. Whereas, the negative correlation is born due to the existence of agency costs between creditors and stockholders. As of taxation theory, the influence of taxation is dynamic in nature, hence according to this principle, it is not easy to establish a correlation between debt and performance; as it is dependent on tax deductibility of interest, revenue, tax and non-liabilities tax cushion (Kebewar, 2012).

4.2 Financial Performance

Performance is a complex word and holds myriad of meanings, due to its dimensional nature. The word can be viewed at different angle: financial and company. An entities performance can be derived by using variable that represent yield, revenue, growth and consumer satisfaction. On the other hand, financial performance, which demonstrate the maximization of shareholders wealth, can be measured by looking at a company's productivity. The calculation of financial performance is done by using profitability ratios such as Return on Assets, Retained Income, Earnings per share, Return on Investment, Price per Earning ratio, Market Capitalization, etc. When determining which profitability ratio is to be used, the objectives of firms plays a crucial role in this matter. In this research, it focuses more on firm's performance, which increases market value. Return on Assets and Return on Equity are the most popular profitability ratio used (Tudose, 2012). Previous researches have demonstrated a positive relationship between Return on Assets and capital structure. For instance, John (2013), conducted a research on the effect of capital structure on firm performance in Nigeria. By utilizing correlation analysis, and regressing data from 2007 to 2011 and employing Return on Equity (ROE) and Return on Asset (ROA) as dependent variable, and Long term Debt to Capital (LDC), Debt to Capital (DC), Debt to Common Equity (DCE), Short term Debt to Total Debt (SDTD) and Age of the Firm (AGE) as proxy for independent variable (capital structure), He found out that all independent variables were directly and significantly related to ROA, with the exception of LDC which delivered a negative but significant correlation. On the other hand, Riaz (2015) regressed data ranging from 2009 to 2013 using panel least square technique and correlation analysis. By using yearly reports of 28 listed companies in chemical industry of Pakistan, his findings showed that Total Debt Ratio (TDR) and Short-Term Debt to Total Asset (STDA) had a significant negative impact on ROA. But LTDA showed an insignificant negative effect on ROA. The relationship between ROA and Time Interest Earned (TIE) was positive as well as significant. However, Debt to Equity Ratio (DER) and Long-Term Debt to Asset (LTDA) had negative and insignificant influence on ROA.

In many research conducted, ROE has delivered a negative but insignificant relationship. Khan (2012), stated in his research that financial leverage and company's profitability, represented by ROE demonstrated a negative relationship which was not significant. To represent leverage, he used Total Debt to Total Assets Ratio as well as Short Term Debt to Total Asset. Likewise, Hassan, et al. (2014) also noticed the lack of significance between capital mix and profitability measured by ROE. However, for Goyal (2013), he noted that there was a significant positive relationship between ROE with Short Term Debt to Capital ratio, representing financial leverage but when he used Long Term Debt to Total Capital, the result demonstrated a negative relationship. According to Yat Hung et al. (2002), in their research termed as capital structure and profitability of the property and construction sectors in Hong Kong, they found out that most construction companies were highly geared due to high cost of equity incurred, thereby resulting to negative profit margin. Also, Baharuddin et al. (2011), by regressing data of construction companies from 2001-2007 of 42 construction firms listed in bursa Malaysia, and using debt to asset ratio as their independent variable, they came to a conclusion that there was a negative but significant relationship between profitability and debt to total asset ratio. Similar result was obtained by Youssef & El-Ghonamie (2015) who employed debt ratio as independent variable with the research focusing on Egyptian construction firms. Overall literature shows that there is a negative but significant relationship between debt to asset and debt to equity with net profit margin in construction sector.

4.3 Hypothesis development

In order to meet the objective of this research, the following hypothesis will be used.

H₁: There is a significant impact of capital structure on financial performance.

H₂: There is a relationship between debt to equity and financial performance.

H₃: There is a relationship between debt to asset and financial performance.

5. Methodology

Bursa Malaysia stock exchange hosts approximately 811 companies listed that comes from 18 different industries within the economy. Among the listed companies, are a total of 44 firms that falls under construction sector as of 2016 which is the targeted population. In order to conduct this research, 36 constructions firms will be selected. The above selected sample size is appropriate, as it represent 90% of the total firms listed within the industry. In addition, 36 firms is enough to offer rich and viable information, that can be provide reliable information fit for the entire population. In addition, this sample size falls under 95% confidence level and 5% marginal error, an acceptable level for research undertaking. To avoid biasness, random sampling technique will be used. Therefore, firms will be selected randomly from the population of 44 construction firms. Through this technique, companies have equal opportunities of being selected and data collected can be relied upon. For the purpose of this research, secondary data sources will be used. The feasibility of using secondary data is because analysis done will depend on past data 2010-2015, which can only be obtained for secondary material. The research will therefore use journals, newspapers and books resources. The main

source used will be annual reports of firms published on Bank Negara website as well as individual construction companies' websites. Other statistical data from reliable sites will be also be used.

6. Data Analysis

This section seeks to provide an analysis of the data collected from financial statements of individual companies between the years 2011 to 2015; which are the dependent variables (return on asset, return on equity, net profit margin) and independent variables (debt on asset and debt on equity). An E-views 7.1 econometric software will be utilized for this purpose. The aim is to obtain the objective of this research which it to establish whether there is a relationship between capital structure and profitability of construction firms and whether such relationship is significant or not.

6.1 Regression and correlation analysis

Dependent Variable: ROE				
Method: Panel Least Squares fixed effect results				
Sample (adjusted): 2012 2015				
Periods included: 4				
Cross-sections included: 36				
Total panel (balanced) observations: 144				
Convergence achieved after 6 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.135095	0.032485	4.158659	0.0001
X1	-0.128477	0.027377	-4.692923	0.0000
X2	-0.004918	0.016456	-0.298871	0.7656
AR(1)	0.312825	0.072248	4.329853	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.472372			
Mean dependent var	0.062708			
Adjusted R-squared	0.281420			
S.D. dependent var	0.271435			
S.E. of regression	0.230093			
Akaike info criterion	0.125150			
Sum squared resid	5.559010			
Schwarz criterion	0.929475			
Log likelihood	29.98917			
Hannan-Quinn criter.	0.451983			
F-statistic	2.473782			
Durbin-Watson stat	2.619662			
Prob(F-statistic)	0.000152			
Inverted AR Roots	.31			

Table 1: Regression Model - ROE against debt to equity (x_1) and debt to asset (x_2)

Table 1 above represent the result of the return on equity regression model. According to the results obtained, the constant value of the model is 0.1351. Meaning return on equity will amount to 0.1351, when other factors affecting it are reduced to zero. The coefficient for the return on equity against debt to equity (x_1), debt to asset (x_2) is -0.1284 and -0.0049. The error term coefficient is 0.3128. Hence, from the regression result, the following model was derived.

$$ROE = 0.1351 - 0.1284DE - 0.0049DA + 0.3128_{it}$$

In pursuit to the above model, a unitary increment in debt to equity will reduce the return on equity of the company by 0.1284. Hence a potential increase in debt to equity will result to a decrease in return on equity and vice versa. The same relationship is exhibited with debt to asset. According

to the results, a unitary increase in debt to equity will result to a decrease in return on equity by 0.0049. The debt to equity has also an inverse relationship with return on asset. Hence, to increase return on equity, the debt to asset will need to be reduced. This value can be explained because existence of debt would mean that the company has to pay fixed interest to its creditors, thereby reducing the total earnings of shareholders from invested capital.

	ROE	DE	DA
ROE	1.000000	-0.297287	-0.073407
DE	-0.297287	1.000000	0.182384
DA	-0.073407	0.182384	1.000000

Table 2: Correlation Analysis of ROE against Debt to Equity and Debt to Asset

As per the result demonstrated by the table above, there is a negative correlation between return on equity with debt to equity and debt to asset with a value of -0.2973 and -0.0734. This means the both the independent variable have a negative impact on the performance of construction firms. Debt to asset has the highest negative correlation of -0.2973 compared to debt to equity, which has a correlation coefficient of -0.0734. Following table 1, the R² Value reveals that overall model has explicated 47.23% of the total variation of the dependent variable.

Dependent Variable: ROA			
Method: Panel Least Squares			
Date: 07/10/16 Time: 17:28			
Sample (adjusted): 2012 2015			
Periods included: 4			
Cross-sections included: 36			
Total panel (balanced) observations: 144			
Convergence achieved after 5 iterations			
Variable	Coefficient	Std. Error	t-Statistic Prob.
C	0.067275	0.010200	6.595309 0.0000
X1	-0.024109	0.011213	-2.150195 0.0338
X2	-0.003072	0.007569	-0.405840 0.6857
AR(1)	-0.051317	0.096505	-0.531754 0.5960
Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.453837		
Mean dependent var	0.050972		
Adjusted R-squared	0.256178		
S.D. dependent var	0.104996		
S.E. of regression	0.090554		
Akaike info criterion	-1.739923		
Sum squared resid	0.861007		
Schwarz criterion	-0.935598		
Log likelihood	164.2744		
Hannan-Quinn criter.	-1.413091		
F-statistic	2.296059		
Durbin-Watson stat	1.957017		
Prob(F-statistic)	0.000474		
Inverted AR Roots	-.05		

Table 3: Regression Model - ROA against debt to equity (x₁) and debt to asset (x₂)

Table 3 above represent the result of the return on asset regression model. According to the results obtained, the constant value of the model is 0.0673. Meaning return on asset will be equal to 0.0673 when other factors affecting it are reduced to zero. The coefficient for the return on asset

against debt to equity (x₁), debt to asset (x₂) is -0.02411 and -0.0031. The error term coefficient is -0.051317. Hence, from the regression result, the following model was derived.

$$ROA = 0.0673 - 0.02411DE - 0.0031DA - 0.0513_{it}$$

In pursuit to the above model, a unitary increment in debt to equity will reduce the return on equity of the company by 0.02411. Hence a potential increase in debt to equity will result to a decrease in return on asset and vice versa. The same relationship is exhibited with debt to asset. According to the results, a unitary increase in debt to asset will result to a decrease in return on asset by 0.0031. The debt to asset has also an inverse relationship with return on asset. Hence to increase return on asset, the debt to asset will need to be reduced.

	ROE	DE	DA
ROE	1.000000	-0.248966	-0.071006
DE	0.248966	1.000000	0.182384
DA	0.071006	0.182384	1.000000

Table 4: Correlation Analysis of ROA against Debt to Equity and Debt to Asset

As per the result demonstrated by the table above, there is a negative correlation between return on asset with debt to equity and debt to asset. The value of correlation between return on asset and debt to equity was -0.2489 and between return on asset with debt to asset was -0.0710. This means the both the independent variable have a negative impact on the performance of construction firms. Debt to equity has the highest negative correlation of -0.2489 compared to debt to asset, which has a correlation coefficient of -0.071006. Following table 3, the R² Value reveals that overall model has explicated 45.38% of the total variation occurring in the dependent variable.

Dependent Variable: NPM				
Method: Panel Least Squares				
Date: 07/10/16 Time: 18:03				
Sample (adjusted): 2012 2015				
Periods included: 4				
Cross-sections included: 36				
Total panel (balanced) observations: 144				
Convergence achieved after 8 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.595990	0.054075	11.02165	0.00
X1	-0.416568	0.065263	-6.382889	0.00
X2	-0.017053	0.046953	-0.363207	0.71
AR(1)	-0.341696	0.077835	-4.389977	0.00
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.656450			
Mean dependent var	0.320069			
Adjusted R-squared	0.532118			
S.D. dependent var	0.784784			
S.E. of regression	0.536807			
Akaike info criterion	1.819459			
Sum squared resid	30.25703			
Schwarz criterion	2.623783			
Log likelihood	-92.00105			
Hannan-Quinn criter.	2.146291			
F-statistic	5.279799			

Durbin-Watson stat	2.365303
Prob(F-statistic)	0.000000
Inverted AR Roots	-.34

Table 5: Regression Model - NPM against debt to equity (x₁) and debt to asset (x₂)

Table 5 above represent the result of the net profit margin regression model. According to the results obtained, the constant value of the model is 0.5960. Meaning net profit margin will be equal to 0.5960 when other factors affecting it are reduced to zero. The coefficient for the return on asset against debt to equity (x₁), debt to asset (x₂) is -0.4166 and -0.0171. The error term coefficient is -0.3417. Hence, from the regression result, the following model was derived.

$$NPM = 0.5960 - 0.41166DE - 0.0171DA - 0.3417_{it}$$

In pursuit to the above model, a unitary increment in debt to equity will reduce the net profit margin of the company by 0.0411. Hence a potential increase in debt to equity will result to a decrease in return on asset and vice versa. The same relationship is exhibited with debt to asset. According to the results, a unitary increase in debt to asset will result to a decrease in return on asset by 0.0171. The debt to asset also has an inverse relationship with net profit margin. Hence, to increase net profit margin, the debt to asset will need to be reduced.

	NPM	X1	X2
NPM	1.000000	-0.424732	-0.106222
DE	-0.424732	1.000000	0.182384
DA	-0.106222	0.182384	1.000000

Table 6: Correlation Analysis of ROA against Debt to Equity and Debt to Asset

As per the result demonstrated by the table above, there is a negative correlation between net profit margin with debt to equity and debt to asset. The value of correlation between net profit margin and debt to equity was -0.4247 and net profit margin with debt to asset was -0.1062. This means the both the independent variable have a negative impact on the performance of construction firms. Debt to equity has the highest negative correlation of -0.4247 compared to debt to asset, which has a correlation coefficient of -0.1062. Following table 5, the R² Value reveals that overall model has explained 65.64% of the total variation occurring in the dependent variable.

6.2 Normality test

Skewness is a degree of asymmetry of the distribution of the sequence around its mean. If the skewness of a symmetric distribution is zero, then it shows that the series has a normal distribution. Positive skewness means that the distribution has a long right tail and negative skewness implies that the distribution has a long-left tail (Eviews, 2016). Kurtosis quantifies the peakedness or smoothness of the distribution of the series. If the kurtosis is more than 3, then the conclusion will be that distribution is peaked (leptokurtic) relative to the normal. However, if the kurtosis is less than 3, then such distribution is deemed flat (platykurtic) relative to the normal (Eviews, 2016). Jarque-Bera is a statistical test

for determining whether the series is normally distributed or not. The statistic test estimates the difference of the skewness and kurtosis of the series with the normal distribution. Under the null hypothesis of a normal distribution, the Jarque-Bera statistic is distributed as x² with 2 degrees of freedom. If the identified Probability of Jarque-Bera statistic exceeds (in absolute value) the observed value under the null hypothesis—a small probability value results to the rejection of the null hypothesis of a normal distribution. Although obtaining normal distribution is required it is not usually crucial in real life. The requirement of a normal distribution is only crucial when required to do certain test. For my case, the data of the variables are not equally distributed as most of the values are Close to Zero or a Natural Limit. Hence, the skewness portrayed. However, methods such as Box-Cox Power transformation could be used to make data be normally distributed (Eviews, 2016).

Sample: 2011to 2015					
	NPM	ROA	ROE	X1	X2
Skewness	-2.90668	3.58863	4.26567	2.96917	12.3213
	0	8	3	3	5
Kurtosis	23.3525	23.4984	41.3169	11.9941	160.693
	5	9	4	2	4
Jarque-Bera	3360.16	3537.76	11557.2	871.185	191058.
Probability	0	2	9	7	5
	0.00000	0.00000	0.00000	0.00000	0.00000
	0	0	0	0	0
	180	180	180	180	180
Observation					
s					

Table 7: Normality test for the data series

Looking at the findings portrayed from the table below, for Jarqua-Bera both the p-values are less than 0.05 confidence level. From the normality test done above, we will reject the null hypothesis. Meaning all that data series are not normally distributed. However, this is not a concern. The reason is that most of the data collected were nearly zero or a natural limit. There are also existence of extreme value and this is because company performance is different. Hence, despite data not being normally distributed, the reliability is still maintained. NPM is also negatively skewed, whereas the rest of the series shows positive skewness. The data are also peaked.

6.3 Phillips-Perron Fisher unit root test

The availability of trending behavior seen in economic and financial time series may result to obtaining results that shows relationship between variables which may not always be the case, leading to wrong conclusion leading to removal of some data or loss of important information. PP unit root test can be used to determine the consistency of the data set collected.

H₀: There is a unit root for the series

H₁: There is no unit root for the series

Method	Statistic	Prob.**
PP - Fisher Chi-square	178.674	0.0000
PP - Choi Z-stat		NA

Table 8: Phillips-Perron Fisher Unit Root Test on ROE

Method	Statistic	Prob.**
PP - Fisher Chi-square	142.824	0.0000
PP - Choi Z-stat		NA

Table 9: Phillips-Perron Fisher Unit Root Test on ROA

Method	Statistic	Prob.**
PP - Fisher Chi-square	198.662	0.0000
PP - Choi Z-stat	-6.98591	0.0000

Table 10: Phillips-Perron Fisher Unit Root Test on NPM

From the result shown, the P-Value for all the models is less than the alpha value of 0.05, thus we will accept the alternative hypothesis. The result shows that the pp unit test is stationary, hence the series is not autocorrelated with 1%.

6.3 Autocorrelation

The autocorrelation of the regression models has been tested, using the table 1,3 and 5 the value of Durbin-Watson factors for return on equity, return on asset and net profit margin were 2.6197, 1.9570 and 2.3653 respectively. According to Shubita & Alsawalhah (2012), there is no autocorrelation when the value of Durbin-watson factors are within 1 to 3. Hence, using this decision rule, there is no autocorrelation for the above regression models.

6.4 Multicollinearity

Multicollinearity occurs when there is a high correlation between the independent variables. The problem of multicollinearity makes a significant variable to be insignificant because it increases the standard error of the variable.

	DE	DA
DE	1.000000	0.182384
DA	0.182384	1.000000

Table 11: Collinearity between Debt to Equity and Debt to Asset

Since the correlation between the dependent variables is low as in 0.1824 also 18.23%. Therefore, there is no multicollinearity between the independent variables.

6.5 Hypothesis Testing

6.5.1 Wald Test- Coefficient Restrictions

For hypothesis testing, the Wald Test- Coefficient Restrictions will be used. This is a type of test which is used

to test the combined significance of the coefficients. According to the null hypothesis, the beta of all variables is usually reduced to zero. The decision criteria for this test is that if the p value of F- statistics is less than 0.05, then we will reject the null hypothesis and accept the alternative hypothesis of the model.

Wald Test: Equation: Untitled			
Test Statistic	Va	df	Probability
F-statistic	10	(2, 140)	0.0000
Chi-square	21	2	0.0000
Null Hypothesis: C(2)=0, C(3)=0 Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(2)	-0.095850	0.020643	
C(3)	-0.003817	0.014165	
Restrictions are linear in coefficients.			

Table 12: Wald Test- Coefficient Restrictions for Return on Equity model

Looking at the F-test p-value is 0.0000, which is lower than 0.05. Hence, from the analysis we above, we will reject the null hypothesis and accept the alternative hypothesis.

Wald Test: Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic		(2, 140)	0.0317
Chi-square		2	0.0291
Null Hypothesis: C(2)=0, C(3)=0 Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(2)	-0.022111	0.008505	
C(3)	-0.001847	0.006907	
Restrictions are linear in coefficients.			

Table 13: Wald Test- Coefficient Restrictions for Return on asset model

From the table, we can see that the F-test p-value for the variables is 0.0317 and 0.0291. Since both the values less than 0.05 then we will reject the null hypothesis and accept the alternative hypothesis.

Wald Test: Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic	15.63473	(2, 140)	0.0000
Chi-square	31.26946	2	0.0000
Null Hypothesis: C(2)=0, C(3)=0 Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value	Std. Err.	
C(2)	-0.306696	0.055900	
C(3)	-0.014756	0.049923	
Restrictions are linear in coefficients.			

Table 14: Wald Test- Coefficient Restrictions for Net Profit Margin Model

Similarly, the F-test p-value of the coefficients is 0.0000, which is lower than 0.05 confidence level. Referring to the result above, we will reject the null hypothesis and accept the alternative hypothesis.

7. Discussion of Findings

7.1 The impact of capital structure on financial performance

Correlation result shows that the capital structure does affect the financial performance of the company. Meaning both the debt to equity and debt to asset have an impact on return on equity, return on asset and net profit margin. But there is different result obtained when it comes to significance. The value of debt to equity had a significant impact on performance of the company and this is due to the fact the P-value of the correlation was lower than 0.05 (P-value <0.05) confidence level. However, for debt to asset ratio the p-value obtained from the model were higher than 0.05 confidence level, hence showing that the impact of debt to asset on profitability is not significant despite existing. Hence, from the discussion above for debt to equity we rejected the null hypothesis that states that there is no significant impact of capital structure on financial performance and accepted the alternative hypothesis which states that there is a significant impact of capital structure on financial performance. In the case of debt to asset, we failed to reject the null hypothesis which states that there is no significant impact of capital structure on financial performance. This shows that debt to asset highly affect construction firms' performance, whereas the effect of debt to asset is minimal. This means that construction firms need to pay much attention in controlling the amount of debt they have compared to equity, as this greatly affect how companies perform. The same result can be seen in the literature. For instance, John (2013), conducted a research on the effect of capital structure on firm performance in Nigeria. By utilizing correlation analysis, and regressing data from 2007-2011 and employing Return on Equity (ROE) and Return on Asset (ROA) as dependent variable, and Debt to Common Equity (DCE), as proxy for independent variable (Capital Structure), He found out that debt to equity variables were significantly related to ROA and ROE. Khan (2012), on the other hand, stated in his research that financial leverage and company's profitability, represented by ROE demonstrated a negative relationship which was not significant. To represent leverage, he used Total Debt to Total Assets Ratio as well as Short Term Debt to Total Asset. Likewise, Hassan, et al. (2014) also noticed the lack of significance between capital mix and profitability measured by ROE. From the above literature, we can emphasize that companies need to lay much emphasis on the debt to equity ratio and ensure that they are at an optimum level. Using the regression model of this study, the suggestion is that a lower debt to equity ratio and debt to asset ratio is preferred, however the impact of debt to equity is greatly emphasized due to its significant on performance of construction firms. In summary, the first objective of the research has been met with a conclusion that there is an impact of capital structure on financial performance of construction firms. The impact is significant when it comes

to debt to equity and insignificant for debt to asset. More weight should be placed on determining the level of debt of company relative to equity capital.

7.2 The relationship between debt to equity and financial performance

From the regression findings obtained previously, the result showed that there was a negative relationship between debt to equity with return on equity, return on asset and net profit margin of construction firms and this is because the coefficient of correlation between debt to equity with the dependent variable were all negative. Therefore, we rejected the null hypothesis which states that there is no relationship between debt to equity and financial performance and accepted the alternative hypothesis, which states that there is a relationship between debt to equity and financial performance. This shows that an increase in the debt to equity ratio or when companies employ more debt funding than the equity, then the performance of the company will be reduced. In order for companies to therefore improve their performance, there is a need to reduce this ratio further. The finding of the research is supported by similar findings. For instance, Raiz (2015) through regression analysis found out that there was negative relationship between debt to asset and Return on asset. Moreover Youssef & El-Ghonamie (2015) who researched on the relationship between capital structure and profitability of construction firms in Egypt came with similar result that the debt to equity ratio had a negative relationship with net profit margin. The result is also supported by the trade-off theory, this theory attempts to describe the decision of going for financial leverage by making trade-off between profits and cost of debt. The compromise between charge and benefits of borrowing and stocking company assets, is viewed as an important determinant in coming up with an ideal debt ratio. Conferring to this theory, firms' decision to raise funds using debt rather than equity, is to enable it defines an ideal debt ratio that would bring substantial value to the business. Hence, the optimum capital mix of a firm can only be derived when firm makes its adjustments costs, which in most cases it is specific to different entities (Gansuwan and One1, 2012). Therefore, for construction firms an ideal capital structure would be a debt level at which the cost of borrowing is minimized and where the debt level is low, in order for companies to fetch high profit and perform well in the long run. Hence the objective of the study has been met which shows that there is a negative relationship between debt to asset and performance.

7.3 The relationship between debt to asset with financial performance

The regression analysis previously done revealed that there is a negative relationship exists between debt to asset with return on equity, return on asset and net profit margin. However, the relationship is weaker compared with debt to equity. This negative relationship is exerted by the existence of negative beta value of the regression model. With these findings, we rejected the null hypothesis that states that there is no relationship between debt to asset and accepted the alternative hypothesis, which is there is a relationship between debt to asset and financial performance. Therefore, for construction firms in Malaysia, an increase in the number of assets financed by debt negatively affects the financial performance. Meaning a lower value of debt to asset ratio is

required for construction firms in order to boost their financial well-being. The findings supported by researchers such as Riaz (2015) who found a negative relationship between Debts to asset with Return on Asset. Similarly, Khan (2012), stated in his research that financial leverage and company's profitability, represented by ROE demonstrated a negative relationship which was not significant. To represent leverage, he used Total Debt to Total Assets Ratio as well as Short Term Debt to Total Asset. Likewise, Baharuddin et al. (2011), by regressing data of construction companies from 2001-2007 of 42 construction firms listed in bursa Malaysia, and using debt to asset ratio as their independent variable, they came to a conclusion that there was a negative relationship between profitability and debt to total asset ratio. This therefore, shows the significance of the accuracy of the result obtained. The results are supported by the Pecking Order Theory which attempts to clarify the inverse relationship that exist between Debt ratio and profitability. The theory suggested that entities favour internally generated funds, and incline their dividend pay-out ratio based on their venture prospects, while regulating it, according to the availability of investment opportunities. In a situation where the internal funds are inadequate, an entity will choose the cheapest form of finance, by issuing the safest stocks; which implies that firms would favour equity financing first, before going for debt capital. Therefore, there is an establish pattern employed when making capital structure decision, and the safest source tend to be considered first; such as retained earnings with another source of fund being chosen in an event where it is deemed necessary (Wakida, 2011). The implication of this theory is that, it acknowledges that there is no specific capital structure that firms can adopt to maximise value, rather an adequate capital mix would be detected based on the demand of external funds by the firm. From the result below, the objective of the study was met which showed that there is a negative relationship between debt to asset with financial performance.

8. Research Implications

By coming up with a regression model for the construction industry, this research fills the gap within the literature. Firstly, it increases the overall literate in the area of capital structure and profitability. Secondly, the fact that it offers diagnosis for capital structure problem and an antidote to profitability, the information when used wisely will improve the overall performance of the industry. At national level, an improvement in performance of construction firms would mean better returns for the company and hence a growth in Malaysian Gross Domestic product. Most importantly, since Malaysian development agenda also includes improvement in construction industry, the model gives a crucial tool that can facilitate the attainment of this goal and the overall low of economic development within the country.

9. Recommendation

The contribution of construction companies within a country such as Malaysia that is rapidly growing cannot be emphasized enough. This is because construction companies play crucial role in the overall development of Malaysia and is a major contributor of Gross domestic product (GDP) within this nation. Hence, it is prudent that the industry

generates enough income to enhance the country's GDP. Among the factors that affect performance of a company is the capital structure decision. These decisions highly affect performance, such as in case of debt to equity which explains more than half the changes occurring in net profit margin. Therefore, it is important that construction firms maintain an appropriate debt and equity capital mix that would guarantee great performance. The determination of companies' ideal capital structure can also be used as an important tool for gaining competitive advantage within the sector, as a company will ideal capital structure will earn superior profits compared to fellow competitive companies. In order for Public listed construction companies in Malaysia to enjoy superior benefits, the firms should consider the following result to better improve their profitability and even reduce losses. The finding of the research showed that debt is inversely proportion to profitability. Hence to have an appropriate capital structure debt level, the amount of debt or the cost of capital need to be reduced. An increase in debt will result to a decrease in the overall profit margin by 0.41166, almost 41% as net profit margin is highly sensible or elastic to net profit margin. It will also decrease return on equity by 0.1284 which is approximately 13% and return on asset by 0.02411 which is little more than 2.4%. Since the coefficient of correlation is higher in net profit margin, more emphasis should be placed here. One way for the company to increase the net profit margin is to borrow few debts. This will reduce the total cost of funding and increase net income, thereby enhancing profitability. Construction firms should seek source of capital that matches their cash requirements and have low cost of capital. There are many ways where a company can reduce cost of capital. One such way is by funding short term assets with short term liability and long-term asset with long term liabilities. This will generally improve the solvency level, enable company to meet liquidity needs efficiently and most important enjoy access to cheap capital. Construction firms can also make use of discount on payments, increase the minimum time of receivables and reduce the account payable period. This will pave way for access to cheaper sources of capital, improve the overall cash flow, reduce the overall cost associated with funding's and increase internal capital. Most important for construction entities that seek to maximize their profit, the management should play a crucial role and determine an appropriate capital mix in order to realize such objective. Also debt to asset ratio need not to be ignored. Construction companies should rely more on retained earnings and equity rather than debt. This will generally reduce the overall riskiness of the firms and hence reduce the interest rate demanded by the creditors as higher risk result to higher demand for return by creditors and lower risk reduces the interest rate demanded by creditors, successively reduces the cost of capital of construction firms, particularly the interest cost. Important to note the interest cost does benefit companies in term of tax shield, however a marginal cost analysis is important as at certain level an increase in debt may not help decrease tax at marginal level. Hence this is another factor that should be considered when making decision on how much debt a company should raise to fund its operations.

10. Conclusion

This research seeks to identify the relationship between capital structure and profitability of construction firms that

are publicly listed in Bursa Malaysia Stock Exchange for a total of 36 companies over the course period of 5 years ranging from 2011 to 2012. The independent variable debt to asset and debt to equity were used to quantify capital structure of the company and the dependent variables return on equity, return on asset and net profit margin were used to as construction firm's performance. The research used secondary information which was obtained from audited financial statement of construction companies published by Bursa Malaysia. For the purpose analysis, Eviews 7 econometric software was used to analyze the data collected. The result collected showed that debt to equity is a significant factor in determining the financial performance of construction companies. However, debt to asset showed no significance with companies' financial performance. The result of the analysis revealed that there was a negative significant between debt to equity with return on equity, return on asset as well as net profit margin. The relationship was however significant since the p-value obtained was lower than the 5% significance level. Therefore, debt to equity is an important determinant of financial performance and may affect how a company performs financially. Meaning for construction firms, debt to equity is a crucial factor when it comes to performance and firms have to reduce the value of debt to equity in order to maximize company's performance. On the other hand, despite debt to asset exhibiting a negative relationship with return on equity, return on asset and net profit margin. The higher p-value revealed that such a relationship is not significant. Meaning the effect of debt to asset on construction performance is not significance, however it does have an impact on it. In summary, there is a negative relationship between capital structure and financial performance of public listed construction firms in Malaysia. Therefore, according to the results, for construction firms in Malaysia which seek to maximize their profit, they should seek to reduce both debt to asset and debt to equity. This means it is better for construction firms to raise more funding from equity rather than debt, if the objective is to maximize profitability.

Future research direction

This research only focused on relationship between capital structure and financial performance. However, as the result has shown the financial of the company is also affected by other factors such as the prevailing economic condition, size, industry, efficiency and many more. Hence, future researcher should seek to include more dependent variables for the development of a more precise model that would explain the variability in financial performance. Also, this study used 5 years data of financial performance of construction firms in Malaysia. For future research, a bigger data should be employed such as 10 years and above, as five-year data may not be comprehensive enough to accurately predict the association between the independent and dependent variable. The wider the data and the larger the number of construction firms, the more accurate the regression model would be for this niche industry. Comprehensive data will allow for greater precision, and a more symmetric distribution. This research also laid an emphasis on construction sector. Future research should cover other sectors in the economy and perhaps make a comparison between different sectors. This may provide a linkage between industries and may help explain the difference between the capital structure requirement of different industries, the cause of such

differences and whether the factor causing the difference can result to the determination of a model that can be employed by more than one industry within a country. Also, future research should expand further and compare the capital structure of similar industries operating in different locations. This may lead to an improvement in the findings and may also help in development of a standardize model that can be utilized by many construction firms. In addition, the objective of this study doesn't provide an estimation of the optimum capital structure that should be adopted by construction firms. Hence, future research should focus on this area, which will help in determining an ideal capital structure. This is due to the fact that capital structure doesn't only affect firm performance, but also affect the solvency of the company and possess the danger of bankruptcy for firms that are highly leverage such that they heavily depend on debt for financing. Hence, capital structure is important for strategic decision making of the company and the subject need to be explored further so as to determine the safe amount of debt that company should borrow without exposing the firm to risks such as default risk and bankruptcy risk.

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Author Profile

Sharifa Hashim was a research scholar from Asia Pacific University of Technology and Innovation with a Bachelor of Accounting and Finance.

Hafinaz Hasniyanti Hassan is an Academic Leader at Asia Pacific University of Technology and Innovation. She has Bachelor of Accounting from University Tenaga Nasional and Master of Business Administration from Open University Malaysia.