



INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES



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To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v11-i14/8934>

DOI:10.6007/IJARBSS/v11-i14/8934

Received: 02 December 2020, **Revised:** 14 January 2021, **Accepted:** 20 February 2021

Published Online: 23 March 2021

In-Text Citation: (Hasan et al., 2021)

To Cite this Article: Hasan, H. L. bt, Zaidi, N. S. B., Mohamed, A. S. b, Yusof, S. bt M., & Aris, N. B. M. (2021). The Effect of Debt Financing on Firm Profitability of Manufacturing Companies in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 11(14), 317-329.

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Special Issue: Contemporary Business and Humanities Landscape Towards Sustainability, 2021, Pg. 317 - 329

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The Effect of Debt Financing on Firm Profitability of Manufacturing Companies in Malaysia.

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Abstract

Debt financing has grown rapidly in recent year. Debt financing is one of the common ways for company to increase their capital to run their business. This study focuses on the debt financing towards firm profitability of manufacturing companies listed in Bursa Malaysia. By applying trade-off theory and pecking order theory, this study predicts there are significant relationship on debt financing towards firm profitability. This research would further collect debt financing data of listed manufacturing companies in Malaysia and analyse the relationship by descriptive analysis and regression analysis. This study used 23 companies to determine the debt financing towards firm profitability of the listed manufacturing companies in Malaysia. The data was taken for the period of 8 years which were from 2010 to 2018. The independent variables were debt ratio, long term debt and short-term debt while the dependent variable was the return on equity and used to measure the firm's performance. The findings will be useful for policymaker and listed manufacturing companies in Malaysia to make better debt financing decisions. Findings of this research will also aid in maintaining an optimum capital structure and maximize the stockholder's wealth of the listed manufacturing companies in Malaysia.

Keywords: Capital Structure, Manufacturing Company, Debt Financing, Malaysia

Introduction

Debt financing is one of the financing alternatives that most commonly used in manufacturing company. As mentioned by Tirole (2006), the terms of debt are borrower need to pay back the money along with agreed services charges such as loan and interest. If they do not pay the debt as promised, the lender can start and do collection proceedings such as claim the debt from the borrower. Most entrepreneur want to avoid this process since they can lose their business and non-business assets. Payback period for long term loan usually more than 1 years. It depends on the deal negotiated by the borrowers and the lenders. These loan normally are secured and had guarantee by the entrepreneur.

This research is about the effect of debt financing on firm profitability of manufacturing company in Malaysia. There are a lot of manufacturing companies listed in Bursa Malaysia, but the researchers

only choose 23 companies which are in food and beverages sector that were listed in Bursa Malaysia. This study is attempting to determine and analyze an optimal debt ratio for manufacturing companies in Malaysia, especially in food and beverages. A good debt ratio can help maximize the profitability of the company. There are two theories that were being used in this research which are trade-off theory and pecking order theory.

Debt financing impact on the firm profitability is one of the vital decisions that need to be controlled by all firms either new or experienced company. This research is more focused on the capital structure of the company. Many of the companies use debt, either long term or short term as their capital to start or sustain their business. As stated by Brealey et al. (2006), capital structure can be defined as the debt and equity financing combined. Abor (2005) indicated that, the company need to make wise decision in choosing their capital structure to achieve the company's objectives.

Debt is one the important ways to know the performance and growth of the company. As stated by Schiantarelli and Jaramillo (1996), long term debt financing allows the manufacturing company improve their performance. This can be achieved if the company have enough capital to run the business. Manufacturing company can generate income using internal, external debt or equity. If the company have too much debt, and unable to pay the debt back, it will affect the company itself or its employees at the same time. A company might choose to dismiss their employees to reduce their expenses and avoid bankruptcy.

In conclusion, debt can be good, but sometimes if not managed properly can be dangerous to the company. Besides, even though few researches have been done on debt financing, the results produced were mixed (positive and negative) towards the firm performance. Additionally, there are lack research done on debt financing in food and beverages industry in Malaysia, hence researchers attracted to do this research and study about the impact of debt financing on Manufacturing companies and how the company manage their debt.

Research Objectives

To investigate the effect of debt financing on firm profitability of Manufacturing Company in Malaysia. This study specifically addresses the following objectives:

- I. To determine the relationship between debt ratio and firm profitability of manufacturing company in Malaysia.
- II. To examine the relationship between long term debt and firm profitability of manufacturing company in Malaysia.
- III. To examine the relationship between short term debt and firm profitability of manufacturing company in Malaysia.

Research Hypothesis

H₁: There is a significant relationship between debt ratio and firm profitability of manufacturing company in Malaysia.

H₂: There is a significant relationship between long term debt and firm profitability of manufacturing company in Malaysia.

H₃: There is a significant relationship between short term debt and firm profitability of manufacturing company in Malaysia.

Literature Review

Trade-off theory is one of the theories in capital structure. Trade-off theory is the evolution from the Modigliani and Miller theory but taking consideration the effects of taxes and bankruptcy costs. This theory explains the differences of the debt-to-equity ratios in different companies but does not explain differences in the same company. As mentioned by Al-Sakran (2001), further marginal will get advantages or benefits will increase, when rejected debt as the borrowings rise, while the cost of marginal increase, so that a company that is limiting its overall value will focus on this trade-off for choosing how much debt and equity needed to use to finance their company.

Pecking order theory is made by Donaldson, but Myers and Majluf made it popular in (1984). It is a level to generate more funds that was divided into internal and external financing. This theory continues that, the business complies with a pyramid of financing sources and prefer internal financing when available. Debt is preferred more than equity if external financing required. Therefore, the form of debt can act as a signal for the company to do external financing.

According to Shyam-Sunder & C. Myers (1999), stated that, companies determine their debt levels by comparing the advantages and cost of debt financing. The marginal present value of interest tax shield equal to the marginal present value of the costs of financial distress. If the company follows the pecking order theory, then in a regression of financing deficits, a slope coefficient is observed (Harris and Raviv, 1991).

Manufacturing Company

Manufacturing company is one branch of sector that made tools and processes raw materials to transform it into the products that the company produces. Industrial design and engineering were the two sector that closely related to the manufacturing sector. Manufacturing sector includes all the intermediate process that is required for the production components.

Debt Ratio

Numerous studies produced mixed results for debt financing and firm performance. Rahman, et al. (2019) research on 10 listed manufacturing firms in Bangladesh, reveals that debt ratio have a positive impact on profitability of the manufacturing firms in Bangladesh. While Pandey and Sahu (2019), shows negative impact of debt on firm performance of manufacturing firms in India. The results from (Habib et al., 2016), shows a significant but negative relationship between debt and return on asset. Yazdanfar and Ohman (2015), shows negative relationship between debt and firm performance. Lang et al (1996); Yuan & Motohashi (2008), stated that the market value's ratio had been used to replace the costs of an assets. According to Lindenberg and Ross (1981), to discriminate company growth potential, the Tobin's Q add the cross term and the debt ratio to the investment equation. Study shows, the company that have higher debt ratios than the other companies, make larger investment than others. Nevertheless, (Lang et al., 1996) indicate based on the analysis between debt ratio and companies' growth have negative correlation between debt ratio and investment. As stated by (Toy et al., 2014), the relationship between debt ratio and growth rate in USA and Japan is positive. Tax shield could contribute to the positive impact of leverage on profitability of listed manufacturing firm in China (Dalci, 2018).

Long Term Debt

(Guin, 2011) stated that long term debt needs to be financed by long term liabilities following the matching principle of finance. As indicated by (Ebaid, 2009) in his research about emerging market economy of Egypt found that there is a negative effect between long term debt and return on assets. (Huang & Song, 2006), also stated that long term debt and firm's profitability have a negative relationship by using the formula of ROA. However, Abor (2005) analysed that there is positive effect of long term towards financial performance. Long term debt is one of the components in capital structure. As mentioned by (Barclay & Smith, 1995), long term debt is more sensitive to the potential of wrong pricing. If the investor can't access the firm's performance, the low firm's performance will issue the debt with the higher price. The higher debt price relates to the maturity structure. The lower firm's performance would prefer to issue long term debt. While, higher firm's performance would prefer short term debt. (Habib et al., 2016) shows a negative but significant relationship between long term debt and return on assets of non-financial firms in Pakistan.

Short Term Debt

Short term debt needs to finance with short term liabilities, according to the matching principle of finance which was mentioned by (Guin, 2011). As eloquently stated by (Diamond, 1991), the company that is higher in ranking of credits prefer to issue short term debt because of less refinancing risks. This statement means a negative relationship as better performance company wants to avoid maturity's crisis. (Diamond, 2004) also stated that low-rated company are limited as a lender of short-term debt. Schiantarelli and Jaramillo (1997) indicated that short term loan not favorable to more productivity while long term owing lead to improve in productivity. (Graham & Harvey, 2005) indicated that little evidence that short-term debt can decrease the chance that shareholders take on the companies that have high risk projects. As contested by (Admati & Hellwig, 2013) and (Duarte & Eisenbach, 2013) also studied about this theory by observing the increased dependence on short-term debt in the years before the financial crisis in 2007 went exceedingly in risky activities. In conclusion, if short term debt is larger than company cash equivalent, it shows that the company are in bad financial performance and does not have enough cash to pay back the borrowing.

Research Methodology

This research retrieves data from the years of 2010 until 2017 from Bursa Malaysia and the annual financial report of 23 companies of food and beverages (F&B) companies from the manufacturing industry in Malaysia. The F&B companies were chosen because it is one of the fast growing industry in Malaysia which is also categorized by the large export market. In this study, Return on Equity (ROE) will be used to identify the profitability of the manufacturing company. Meanwhile, debt ratio, long term debt and short-term debt will be used as the independent variable.

There are three independent variables that have been selected for this study which are debt ratio (DT), long term debt (LDC) and short-term debt (SDC). While the dependent variable is return of equity (ROE). Multiple regression used to analyze the data of dependent variable and independent variables in this study. Multiple regression model is applied to determine the relationship between dependent variables and two or more independent variables.

Multiple Regression Model

$$ROE = \alpha + \beta_1 DT_{it} + \beta_2 LDC_{it} + \beta_3 SDC_{it} + \varepsilon$$

Where,

ROE = Return of Equity

α = A constant that equal to the y-intercept when all independent variables are equal to zero.

DT = Debt Ratio

LDC = Long Term Debt

SDC = Short Term Debt

i = numbers of manufacturing firms

t = times (years)

ε = Error term which is other possible factors and errors

β_1 , β_2 , and β_3 = the correlation coefficient between independent variables respectively (DT, LDC and SDC) and dependent variable (ROE).

The dependent variable, profitability of food and beverages companies is measured by return on equity (ROE) and it is computed by calculating the net income divided by shareholder's equity. The definition and proxy measurement for dependent and independent variable is summarized in Table 1.

INDEPENDENT VARIABLES	DEFINITION/PROXY MEASUREMENT
DEBT RATIO (DR)	<i>Debt Ratio = Total debt ÷ Total assets</i> Debt ratio also known as debt-to-assets ratio. This ratio is to measure the company's leverage and shows the percentage of the debt were used to finance assets.
LONG TERM DEBT (LDC)	<i>Long term debt = long term debt ÷ total capital</i> Long term debt is use for the capital outlays, which involve in business expenses, such as buy the basic operation things (facilities and assets).
SHORT TERM DEBT (SDC)	<i>Short term debt = short term debt ÷ total capital</i> Short term debt is debt that need to pay within 12 months and include the current portion of long term debt
DEPENDENT VARIABLES	definition/proxy measurement
RETURN ON EQUITY (ROE)	<i>Return on Equity = Net income ÷ Shareholder's equity</i> One of the important objectives in financial management is profitability, because the main objective in each company is to maximize the owner's wealth and it is important to analyze the firm's performance. If the profitability of the manufacturing company is higher, the company's performance also higher

Table 1: definition and proxy measurement for dependent and independent variable

Statistical Analysis

The next section will discuss on the data analysis and results. Sample was from the F&B companies listed in Bursa Malaysia for the period of 8 years. Descriptive statistic will be discussed and data analysis performed.

Panel Data Regression Analysis

The first step taken is to identify list of food and beverages companies that have been listed in Bursa Malaysia to get the sample. This study used 23 companies to determine the debt financing towards firm profitability of the food and beverages companies. The data was taken for the period of 8 years (2010 to 2018). The dependent variable used to measure firm profitability in this study is Return on Equity, while the independent variables are debt ratio (DR), long term debt (LDC) and short-term debt (SDC). Next, descriptive statistic will be carried out to analyse the behaviour of the study variables in term of the mean and standard deviation for the purpose of empirical analysis. Apart from that, three panel data tests conducted in this study was the Pooled Ordinary Least Square (OLS), Random Effect Model and Fixed Effect Model. This panel data and tests was used to check the relationship between return on equity and three independent variables which are, debt ratio, long term debt and short-term debt. Next, this study used the likelihood ratio to test Pooled OLS and Fixed Effect Model. After that, used Breusch and Pagan Lagrangian Multiplier to test Pooled OLS and Random Effect Model and lastly Hausman Test is used to test Fixed Effect Model and Random Effect Model.

Finding and Discussion**Descriptive Statistic**

Variables	ROE	DR	LDC	SDC
Mean	12.94435	25.16717	111.74277	37.48152
Maximum	431.1700	61.84000	72.28000	180.4074
Minimum	-27.83000	0.820000	0.040000	0.431548
Std deviation	36.00174	14.89057	10.86007	37.62681

Table 2: descriptive statistic

The table show the descriptive statistic for dependent variable which is Return on Equity (ROE) and independent variable which are Debt Ratio (DR), Long Term Debt (LDC) and Short-Term Debt (SDC) of manufacturing companies in Malaysia. Based on the table above, mean, maximum, minimum and standard deviation values of each variable were represented. For the dependent variable Return on Equity (ROE), the mean and standard deviation are 12.94435 and 36.00174 respectively. The minimum value of ROE is -27.83000 while the maximum value is 431.1700. Next, for the first independent variable which is debt ratio (DR). The result is recorded that the mean for DR is 25.16717 while the standard deviation is 14.89057. For the maximum and minimum are 61.84000 and 0.820000 respectively. The value of mean for Long Term Debt (LDC) is 111.74277 while for standard deviation is 10.86007. The maximum value for LDC is 72.28000 while the minimum value is 0.040000. Lastly is Short Term Debt (SDC), the mean value is 37.48152 and the standard deviation is 37.62681. The maximum and minimum value is 180.4074 and 0.431548 respectively.

Panel Data Correlation Test

Correlation Probability	ROE	DR	LDC	SDC
ROE	1.000000 ----			
DR	-0.201601 (0.0061)	1.000000 ----		
LDC	-0.105842 (0.1527)	0.663861 (0.0000)	1.000000 ----	
SDC	-0.108685 (0.1419)	0.836876 (0.0000)	0.320174 (0.0000)	1.000000 ----

Table 3: correlation matrix

The correlation method was used to estimate how strongly all the variables were related or associated with each other. The higher the positive correlation, the stronger the correlation was between the variables and vice versa. This table provide correlation matrix for the sample of 23 food and beverages company that was listed in manufacturing industry in Bursa Malaysia for the time period of 8 years.

Based on the correlation matrix test, the return on equity and debt ratio has a correlation coefficient of -0.201601. This means that both variables have significant negative relationship. On the other hand, the return on equity and long-term debt has a correlation coefficient -0.105842. This illustrates that these two variables have significant negative relationship. Next, the return on equity and short-term debt has a correlation coefficient -0.108685, which means that they have a significant negative relationship as well.

Proposed Model Selection

Dependent Variable: Return on Equity			
Variables	Pooled OLS Model	Fixed Effect Model	Random Effect Model
DR	-1.534087 (0.0021) **	-1.390901 (0.1439)	-1.395949 (0.0311)**
LDC	0.665485 (0.0896) *	0.106467 (0.8608)	0.376678 (0.4159)
SDC	0.342583 (0.0271)	- 0.02979	0.232156 (0.2492)
C	30.89781 (0.0000) ***	47.81562 (0.0000)	34.95163 (0.0000)
Likelihood Ratio	67.796452 (0.000)**		
Breusch Pagan Test	19.59702 (0.0000)		
Hausman Test	6.540997 (0.0881)		
Normality Test			63988.00 (0.000)**

Table 4: Proposed Model Selection

Based on the table above, the pooled OLS Model shows the relationship between dependent variable and each independent variable. Through this table, one of the independent variables shows the negative relationship while the other two shows the positive relationship toward the dependent variable, return on equity (ROE). This means that 1% increase of the DR will cause 1.53% decrease in ROE and holding the other constant. While, 1% increase of the LDC will cause 0.67% increase of ROE while holding the other constant, and lastly the SDC shows the positive relationship towards ROE in the obtained results where it indicates that 1% increase of SDC will cause a decrease 0.34% of ROE while holding the other constant. According to the result above, it shows that debt ratio (DR) and short-term debt (SDC) are significant at 5% level with the probability 0.0021 and 0.0271 respectively. While, the long-term debt shows significant at 10% level with the probability 0.0896. Lastly, the probability value of F-statistic was 0.005423 which is less than 0.05. Therefore, the overall model was significant at 5% level.

Based on the table that derive for the fixed effect model above, there were two independent variable which show negative relationship between the dependent variable, and one independent variable shows a positive relationship. The result shows that 1% increase in debt ratio will cause a decrease of return on equity about 1.39% while holding the other constant. Next, long term debt shows an increase of 1% and the return on equity will increase 0.11% while holding the other constant

and lastly, an increase of short-term debt at 1% will decrease about 0.03% of return of equity. The p-value is 0.1439, 0.8608 and 0.9192 respectively.

The table also shows the results obtained from Likelihood Ratio Test for the sample of observations in food and beverages industry of manufacturing company in Malaysia. If the p-value lower than 0.05 significance level, then this indicates the fixed effect model is more appropriate. Since the results above showed that the p-value is 0.0000 lower than 0.05, therefore this proved that this model that has Fixed Effect model is the appropriate one. Next is another test called Breusch-Pagan Lagrangian Multiplier test was conducted to determine whether the regression model was from Pooled OLS Model or Random Effect Model.

Based on the table above, it shows that the Random effect model for the sample of 184 observation of the food and beverages industry of manufacturing company in Malaysia. Using this result, there is one independent variable that has a negative relationship and two independent variables have positive relationship. This means that 1% increase of debt ratio, will decrease 1.40% of ROE. Next, the relationship of long-term debt and short-term debt between ROE, both shows the positive result. Which is, long term debt increases about 1%, ROE will increase about 0.38% while holding the other constant. Whereas, when short term debt increases to 1%, the ROE will increase to 0.23 while holding the other constant.

Based on the table for the Random Effect Model, the debt ratio only shown the significance level of 5% with the probability 0.0311. Lastly, long term debt and short-term debt did not show any significance toward the return on equity as the p-value more than 5% significance level which is 0.4159 and 0.2492 respectively. The Breusch-Pagan test (LM test) was established by the Breusch-Pagan in the year 1980. Gujarati and Porter (2009) have clarified further that Breusch-Pagan LM test was a normally used test for a regression model in order to determine whether it is a random effect model or pooled OLS model. The purpose of Breusch-Pagan test plays a very significant role in determining the regression model because the coefficient of random effect model and pooled OLS model varies completely from each other.

The test circumstanced that it is time-specific error variance components or individual-specific are zero or to be simple, it means that this model has no pooled effect and all the variables have the same intercept. Among those three values stated that are in the table above, both values from the column were used as the benchmark. Since the probability value of the test was 0.0000, it is significantly less than 0.05 and the chi-square statistic was 19.59702, where it exceeds the critical value. This proved that the random effect model is the appropriate one. Finally, Hausman test conducted to determine whether the regression model was from fixed effect model or random effect model.

Table shows the results obtained from Hausman test for the sample of 184 observations in food and beverages industry of manufacturing company in Malaysia. For the Hausman test, the results above showed that the p-value which is 0.0881 was more than 0.05. Sufficient statistical evidence suggested that the Random Effect Model is the suitable model compared to other model in the food and beverages industry of manufacturing company in Malaysia.

For normality test, the probability obtained from test was 0.000000 which is smaller than 0.05 significance level. Even though, when based on central limit theorem, if the number of sample is bigger and random variable are individually and identically distributed then the distribution tends to be normally distributed (Gujarati & Porter, 2009). In this research, the number of observations were 184 and if the sample have more than 100 it is considered a big sample size. In conclusion, it can be assumed that the error term is not normally distributed as in accordance with the central limit theorem.

Variables	Hypothesis	Results
Debt Ratio (DR)	H ₁ : There is a significant relationship between debt ratio and firm profitability of manufacturing company in Malaysia	H ₁ is accepted
Long Term Debt (LDC)	H ₂ : There is a significant relationship between long term debt and firm profitability of manufacturing company in Malaysia	H ₂ is accepted
Short Term Debt (SDC)	H ₃ : There is a significant relationship between short term debt and firm profitability of manufacturing company in Malaysia	H ₃ is accepted

Table 5: The table shows the summary of variables, hypothesis and results from the test.

Conclusion and Recommendations

This research seeks to identify the relationship between debt financing and profitability of manufacturing companies that are publicly listed in Bursa Malaysia Stock Exchange. A total of 22 companies over the course period of 8 years from 2010 to 2018 were selected. The independent variables which are debt ratio, long term debt and short-term debt and the dependent variable which is the return on equity were used to measure the firm's performance. The research used secondary data which was obtained from manufacturing companies in Bursa Malaysia.

The results show significant but negative relationship between debt financing and firm profitability. This is linked with results from (Habib et al., 2016) which shows a significant but negative relationship between debt and return on asset on non-financial firms in Pakistan, while Pandey and Sahu (2019), also shows negative impact of debt on firm performance of manufacturing firms in India.

Based on this study, there were a few tests used to investigate which was the most appropriate model. First, Pooled OLS Model was tested to look at the effect of independent variables on the dependent variable followed by Fixed Effect Model. Likelihood Ratio test was the method to choose whether Pooled OLS or Fixed Effect Model more appropriate and followed by Random Effect Model. Therefore, based on the result of Likelihood Ratio, the probability is 0.0000 which is smaller than 5% significant level. It means that, Fixed Effect Model is better than Pooled OLS Model.

Next, Lagrangian Multiplier (LM) Test was employed to choose between Pooled OLS and Random Effect Model. Through this test, Random Effect Model have a better result than Pooled OLS. Since, the p-value of Breusch and Pagan test is 0.0000 less than 0.05. Consequently, the evidence suggested Random Effect Model was more appropriate than Pooled OLS Model.

Moreover, the Hausman test is used to know the suitable model between the two model which is Random Effect Model and Fixed Effect Model. Based on the test, the result also shows that Random Effect Model was the best model. From the result, it can be concluded that there is a significant relationship between debt ratio and firm profitability of manufacturing company in Malaysia. The result can further help the manufacturing firms in Malaysia to better understand and make better decision on financing their firm's financial decision directions as well as achieve a better optimal capital structure to improve their shareholders wealth.

For future research, deeper research ought to be conducted to find out the profitability from other industry especially the industry that relied on heavy debt financing in a financial accounting year. This will benefit the industry to a great extent. Other than debt ratio, long term debt and short-term debt, future research should try using different variables to measure the firm performance. This will help to originate findings to verify the actual factors that empower a company to be profitable in long run. The research could be complimentary to this research. Lastly, it is also recommended to add more sample size and longer period of observation for better result.

Acknowledgement

Financial support from University Malaysia Sarawak are gratefully acknowledged. All remaining flaws are the responsibilities of the authors.

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