

CAPITAL STRUCTURE AND PERFORMANCE OF MANUFACTURING COMPANIES ON BURSA MALAYSIA

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Abstract

The study is carried out to examine the impact of capital structure on the performance of Malaysian manufacturing listed corporations. Specifically, the study attempts to investigate the relationship between short-term debt (STD), long-term debt (LTD), total assets (TA) and debt to equity (DE) on the return on equity (ROE) of manufacturing companies listed on Bursa Malaysia. To achieve this objective, the data is collected from the annual data of 30 Malaysian manufacturing companies listed on Bursa Malaysia from 2010 to 2017. The annual reports of the selected companies are available on the Bursa Malaysia webpage. In this study, the data is analyzed using Eviews 9 software. The findings of the study show that total assets (TA) and debt to equity (DE) have negative significant effect on the return on equity (ROE) whereas short-term debt (STD) and long-term debt (LTD) have positive significant relationship with firm financial performance. The study thus contributes towards better understanding on the relationship between the capital structure and performance of the manufacturing companies in Malaysia.

Keywords: capital structure, manufacturing companies, Malaysia

INTRODUCTION

Economic calamity has given a tremendous effect on the firms in Malaysia. One of the most affected sectors in Malaysia is manufacturing industry. Due to this reason, Malaysian exports have dropped dramatically after 1997 with a net export consistent for about 20% which makes Malaysia one of the most open economies that is dependent on international trade. This has been recorded as the greatest decrease in the Malaysian history after the year 1982. Manufacturing as a dynamic sector is considered as a central to the economic development of Malaysia right after service sector and therefore plays a critical role in the Malaysian economy.

Share values are devalued and numerous firms have lost their assets because of this financial crisis that Malaysia experienced. This situation results in a few firms experiencing capital restructuring and some of the other firms even into bankruptcy. Hence, it is crucial for a company to plan a strategic capital structure that is flexible to any kind of changes in the surrounding condition (Adeniyi et al., 2020). Capital structure is an important element for any organization to achieve an improved monetary state.

Capital structure decision plays an important role for a firm to operate successfully in any type of business organization. Manager or upper management tend to decide a right proportion of debt and equity securities by making sure the various cost and benefit gets along with these securities in order to maximize the wealth of its shareholder. Firms normally have face difficulties in developing an appropriate capital structure model resulting a wrong financing decision being made that affects the value of the firm or leads the firm into confronting its financial delinquent which can end up in bankruptcy. The combination of equity and debt have been identified by researchers such as Abor (2005), Zeitun and Tian (2007) and San (2011) to affect the operations of the firms.

Malaysia encountered a financial crisis at the time of 1998. Malaysia endured a withdrawal in Gross Domestic Product (GDP) because of the Asian financial crisis which started from Thailand. This crisis does not begin in Asia but rather because of the United State financial industry which swelled

into harsh global monetary tragedy and profound decline in worldwide market by the end of 2008. In light of all these, a large portion of the determinants of capital structure on financial performance are extremely difficult to be referred as unclear.

The financial performance of the Ringgit Malaysia currency was plugged due to this crisis. Henceforth, this resulted in affected stock prices, share prices and also a high percentage of leverage of firms in Malaysia reflected a higher amount of the former's investment in machinery and other assets in the manufacturing sector as well. Other than that, the export and industrial output were also affected where it deteriorated, and investments were declined. Due to the importance of capital structure on firm performance, therefore, this research is conducted to examine the impact of capital structure on the corporate financial performance in the context of manufacturing sector in Malaysia.

LITERATURE REVIEW

Theories on Capital Structure

Modigliani & Miller

Modigliani and Millers (1958) was the very first theory that have been established from the capital structure in which the research found that the capital structure does not bring any effect on firm's market value and also on the average cost of capital. M&M 1958 theory is a theory that was made based on the inference on the presumption of perfect capital market with risk free debt, no tax, and no transaction cost (Modigliani & Miller, 1958). In the condition of a perfect market, shareholders can sell their asset with no disadvantage for themselves, should be a temporary in earnings to leave them for a short of fund. But in the year of 1963, a new research paper on irrelevance of capital structure by Modigliani and Miller has been published in order to correct or rebate their past error and it was indicated that debt finance gives tax advantage to the firm (Modigliani & Miller, 1963). Due to the tax advantages, the firms can eventually reduce their tax bills as it results in more debt. When debt to equity ratio escalates, the market worth of the firms rises as well. Based on the finding by a study done by Sabin and Miras in year 2015, it refers that the firm esteem is significant to the capital structure. Other than that, it declares that the firm worth can be amplified by raising up the debt level in that certain capital structure that belongs to them.

Trade off Theory

Kraus and Litzenberger (1973) who originated the trade-off theory presented the interest tax shield related to the obligation and the cost of financial distress into a state preference display. Trade-off theory is referred to decisions encompassing several perspectives which include exposure of firm on bankruptcy and agency cost that against the tax benefit associated with the obligation that is being utilized. Trade-off theory is also known as the part for its characterization on how a firm can deal with their power on either short or long-term debts. It also helps to characterize a firm's capital structure that is ought to be used in their trading transactions by stabilizing the benefits and costs. According to a framework of trade-off theory, an organization is alluded to be focusing on the obligation of equity ratio and continuously moving towards its objectives.

Pecking Order Theory

This pecking order theory is positively related to asymmetric data unlike trade-off theory. Asymmetric data often occur amongst manager along with shareholder, where manager is able to distinguish more data compared to external depositor regarding firm performance (Nirajini & Priya, 2013). According to Luigi and Sorin (2009) pecking-off theory has no deliberation on the prime capital structure. The decision made on source of financing depends on the preference order or financial hierarchy where it begins with in-house resources supported by liability and impartiality or more commonly known as equity. Firms maximize their value by choosing to finance new investment with the cheapest available sources (Luigi & Sorin, 2009). Pecking order theory urges the firm to maintain their business so that they stick to financing sources of hierarchy. Based on the finding of a study done by Acaravci (2015), small and large company can both practice the pecking theory.

Firm Size (Total Assets) and Firm Financial Performance

Firm size has been perceived as able to affect the performance of the organization (Pei Sze & Marsidi, 2022). Aduralere Opeyemi (2019) use a sample size of 3 companies in the production of cement while another 3 in dealing with the wires. The time interval used in this research is 14 years which is starting from the year of 2004 and end in 2017. The dependent used are ROA and ROE while the independent that is utilize are total sales, age of firm, leverage and total assets as an indicator of size. Through this research, leverage is the only variables that is significant to the ROE while other independent indicator is not significant towards the firm performance while the other indicator showing mixed result.

In this perspective, Kuncova et al. (2016) on the paper of “The firm size as a determinant of firm performance: The case of swine raising” in Czech has utilized 42 companies from the year of 2007 to 2013. In this paper, the dependent variables that is utilized is ROA, ROE and ROS while the independent variables are total assets and total sales. It is found that the sector of swine of raising in the Czech are surviving a difficult problem mainly in reduction of price. The outcome of this paper demonstrated that the firm size is statistically significant factor influence the performance among the firm where it also discovers that the smaller firm only reached a less performance result compare to the larger firm.

Debt to Equity and Firm Financial Performance

“Effect of financial leverage on firm performance” is a journal that is in Karachi Stock Exchange listed non-financial firms by Raza (2013) for the period beginning from the year of 2004 to 2009. In this study, the author used ROE and ROA as a measurement for the performance (dependent variables) and financial leverage which includes debt to equity ratio (D/E) and total debt to total assets (Debt/Asset) as the independent variables. D/E ratio is a critical device of financial analysis to assess the financial structure of a firm. The outcome shown by this study is that D/E ratio is negatively related to the ROE. As indicated by picking order hypothesis, the organization will in general utilize internally created funds initially and then fall back to external financing. This showed that benefits of the firms will have fewer measure of leverage. Therefore, a negative correlation between ROE and D/E ratio were recognized. The author also stated that the current hypothesis of capital structure contributed to some degree in basic decision making development. This is because capital structure choices are complex multi-dimensional issues.

In the view of the article “The impact of capital structure of firms’ performance: Evidence from Malaysia– a case study approach” composed by Basit and Irwan (2017), industrial sector that is listed in Bursa Malaysia from the period of 211 to 2015 were used as the sample for this study. Based on the study, the researchers found that the debt to equity ratio has a negative impact on ROA and ROE while the total debt ratio and total equity ratio showed a rather insignificant impact on ROA. In contrast, the total debt has a positive impact on ROE, but total equity showed an outcome of insignificant impact on ROE. Moreover, the result on the D/E ratio on ROA and ROE indicates that debt or obligation rise over ideal dimension will increase the cost of capital while expediting negative effect on firm execution or performance. Henceforth, the firm director should be mindful while utilizing the debt fund. The researcher also suggest that future researcher should use a different sector such as technology, utilize a longer period of time series data and increase the sample size as well as to lastly include control variables in the study.

In the study done by Khanam et al. (2014) in Pakistan from the time frame of 2007 until 2012. The aim of this research is to investigate the effect capital structure has on firm’s financial performance especially in the food division registered at Karachi stock exchange in Pakistan. A secondary data was used which includes the annual report of 49 firms. The capital structure in this study were measured by short debt to total assets, long term to total assets, total debt to total asset and lastly debt to equity ratio while the performance was measured by net profit margin, ROA, ROE, earning per share and return on capital employed. In this study, the outcome shown were that the capital structure has a significant negative impact on firm’s ROE, net profit margin, ROA and return on capital employed. Other than that, the researcher also found that the capital structure has an insignificant negative impact on firm’s earning per share. Therefore, the researchers proposed that the organization in food sector of Pakistan

ought not to utilize high proportion of debt or ought to not exceed or surpass an ideal limit of debt since execution is decreased when debt rise. The increased amount of debt might cause liquidation of the organization.

Theoretical Framework

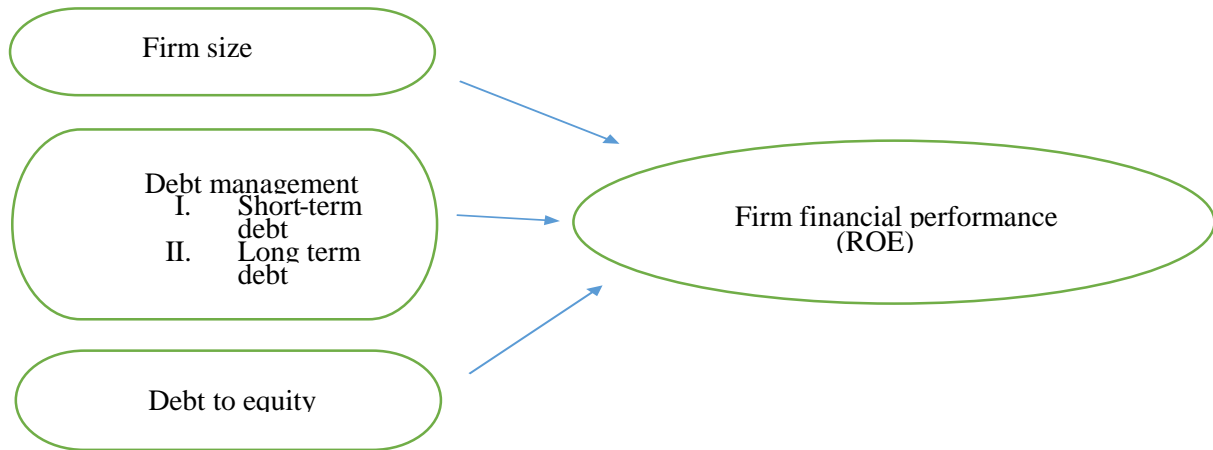


Figure 3: Theoretical Framework

Hypothesis Development

Hypothesis 1: Short-term debt

H₁ : There is a correlation between short-term debt and firm financial performance

Hypothesis 2: Long-term debt

H₁ : There is a correlation between long-term debt and firm financial performance

Hypothesis 3: Firm size (Total assets)

H₁ : There is a correlation between total assets and firm financial performance

Hypothesis 4: Debt to equity

H₁ : There is a correlation between debt to equity and firm financial performance

METHODOLOGY

Data Collection

The data is gathered from the annual reports which is available on the Bursa Malaysia’s website from 2010 until 2017. The variables measurements are presented in the Table below.

Table 5: Measurement of Variables

Variables for Independent	Measurement
Debt to equity (DE)	$\frac{\text{Total liabilities}}{\text{Shareholder equities}}$

Variables for Dependent	Measurement
Return on equity (ROE)	$\frac{\text{Net Income}}{\text{Shareholder equities}}$

Model Specification

This research examines the firm's financial performance of manufacturing companies in Bursa Malaysia by utilizing different factors or variables which includes the firm size (total assets), debt management (short-term debt and long-term debt) and also debt to equity. Econometrics model for this research are as shown below:

$$ROE = \beta_0 + \beta_1 \text{LOGTA}_{i,t} + \beta_2 \text{LOGSTD}_{i,t} + \beta_3 \text{LOGLTD}_{i,t} + \beta_4 \text{DE}_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where,

ROE = Return on Equity of firm i at the time t

TA = Total Asset

STD = Short-term debt

LTD = Long-term debt

DE = Debt to Equity

β_0 = Common y-intercept

$\beta_1 - \beta_3$ = Coefficient of the concerned explanatory variables

$\varepsilon_{i,t}$ = Error term

Thus, the model demonstrated will be utilized in this research as well as for the estimation of the relationship between the explanatory variables. Furthermore, this model will be able to decide the proficiency of the variables in influencing the firm financial performance of manufacturing listed companies.

Data Analysis

Descriptive Test

Throughout the descriptive test, engaging coefficient of every variables will be gathered. Descriptive trial will assist in abridging the utilized description and data estimator which includes central tendency as well as proportion of scattering. Median, mode and mean are the three measures of central propensity which are the foremost common sort of descriptive analysis that will be utilized in statistics and mathematics. Moreover, the measures of variability will be used which consists of variance, kurtosis and skewers, standard deviation, and the minimum and maximum variables. Analytical and empirical analysis will cover the alternate outcomes. The conduct of data set can be interpreted and anticipated by utilizing each of the three measured that is mentioned previously.

Correlation Analysis

The correlation coefficient measures how strongly two variables are associated or related. In the view of this research, the correlation analysis is under taken to discover the correlation between capital structure and firm financial performance related execution. It demonstrates the correlation's dimension that exists between the capital structure and firm financial performance. There are three different correlation test that can be utilized which are Breusch-Godfrey Test, Durbin-Watson d Test as well as Durbin-Watson h Test. The Breusch-Godfrey test will be utilized because it is proportionate to one in view of Lagrange's multiplication test idea in this research. It is additionally appropriate for this research for the fact that the model has a lag of value variables where the dependent variable is a subset of the explanatory variables.

Pooled Ordinary Least Square Regression (OLS)

The ordinary least square regression will be utilized to determine the correlation between the dependent variable and explanatory variables of the research. Next, OLS test will also provide the knowledge on the usefulness of the data through the methodology of least square. The distinction among the dependent

and explanatory variables can be examined through analysis (Gujarati and Porter, 1999). OLS will be utilized because it can minimize or decrease the error between the actual or estimated observed point of the estimated regression line by given the best fit. Therefore, most of the researchers tend to utilize this analysis to determine the correlation between the dependent and explanatory variables. The pooled ordinary least square regression is as demonstrated below:

$$ROE = \beta_0 + \beta_1TA_{i,t} + \beta_2STD_{i,t} + \beta_3LTD_{i,t} + \beta_4DE_{i,t} + \lambda_i + \varepsilon_{i,t} \quad (2)$$

Where,

ROE = Return on Equity of firm i at the time t

TA = Total Assets

STD = Short-term debt

LTD = Long-term debt

DE = Debt to Equity

β_0 = Common y-intercept

$\beta_1 - \beta_3$ = Coefficient of the concerned explanatory variables

$\varepsilon_{i,t}$ = Error term

λ_i = Specific firm effect

The correlation between the capital structure and firm's financial performance will be tested in order to know whether it is positively or negatively related to each other. A significance level of either 1% or 5% will be selected to test the hypothesis projected for each of the explanatory variable.

Breusch and Pagan Lagrangian Multiplier (BG Test)

The BG Test is utilize to test the effectiveness between Pooled OLS and the Random Effect Model by determining the absence of a specific individual term. The OLS model will be considered the best linear unbiased estimate (BLUE) if the $\sigma^2(\varepsilon) = 0$. The random effect model is considered BLUE if the result is opposite. The hypothesis is shown as follow:

$$H_0: \sigma^2(\varepsilon) = 0 \text{ (Pooled OLS Model)}$$

$$H_a: \sigma^2(\varepsilon) \neq 0 \text{ (Random Effect Model)}$$

When the p-value is lesser than level of significance, the test is significant, and the null hypothesis will be rejected. This concludes that the random effect model is more suitable compare to the Pooled OLS model.

Fixed Effect Model

This test utilizes the individual specific impact as its presumption of the fixed effect model which is referred as [$\text{Cov}(\lambda_i, \varepsilon) \neq 0$]. The equation of the model is demonstrated as follows:

$$ROE = \beta_0 + \beta_1TA_{i,t} + \beta_2STD_{i,t} + \beta_3LTD_{i,t} + \beta_4DE_{i,t} + \lambda_i + \varepsilon_{i,t} \quad (3)$$

Where,

ROE = Return on Equity of firm i at the time t

TA = Total Assets

STD = Short-term debt

LTD = Long-term debt

DE = Debt to Equity

β_0 = Common y-intercept

$\beta_1 - \beta_3$ = Coefficient of the concerned explanatory variables

$\varepsilon_{i,t}$ = Error term

λ_i = Specific firm effect

This model turns out to be more adaptable when it is compared with the more seasonal model since it enables the endogeneity of regressors. This model is compatible for the study when the researcher only focuses in a certain set of firms of N and the data will be utilized for the empirical analysis. An assumption such as when N is large, the degree of freedom is used up quickly exists.

The correlation between the dependent and explanatory variables can either be positive or negative. Therefore, a null hypothesis and alternative hypothesis are demonstrated as follows:

H_0 : The debt management (short-term debt and long-term debt), firm size (total assets) and debt to equity have no effect on the firm financial performance.

H_1 : The debt management (short-term debt and long-term debt), firm size (total assets) and debt to equity do have effect on the firm financial performance.

A significant level of 5% will be selected to test the hypothesis projected for each of the explanatory variables. An E-views 9 software will be done in order to obtain the results where the p-value will be determined as well. Then, contrast the p-value obtained with the significance value. In case the obtained p-value is greater than the significance value, the null hypothesis will not be rejected which also refers to the fact that the explanatory variables (STD, LTD, TA, DE) will not statistically be significant on the impact towards the dependent variable (ROE). Moreover, if the obtained p-value is smaller than the significance level, the null hypothesis will be rejected which is also means that the independent variable (STD, LTD, TA, DE) have no effect on the dependent variable (ROE).

Random Effect Model

This test will be utilized for the purpose of measurement of the individual effect randomly. The sound error and stochastic term will be disintegrated in this research. The λ_i is considered as random variables with a zero mean and variance. This is truly inconsistency with the regression of $[Cov(\lambda_i, \varepsilon) = 0]$. The equation of random effect model is as demonstrated below:

$$ROE = \beta_0 + \beta_1TA_{i,t} + \beta_2STD_{i,t} + \beta_3LTD_{i,t} + \beta_4DE_{i,t} + \lambda_i + \varepsilon_{i,t} \quad (4)$$

Where,

ROE = Return on Equity of firm i at the time t

TA = Total Assets

STD = Short-term debt

LTD = Long-term debt

DE = Debt to Equity

β_0 = Common y-intercept

$\beta_1 - \beta_3$ = Coefficient of the concerned explanatory variables

$\varepsilon_{i,t}$ = Error term

λ_i = Specific firm effect

When there is an existing panel data, the random effect model will normally be utilized. The rule of this random effect model is that a research ought to have an individual of N firms which are randomly selected from a huge population. The null hypothesis and alternative hypothesis are as demonstrated below:

H_0 : The debt management (short-term debt and long-term debt), firm size (total assets) and debt to equity have no impact on the firm financial performance.

H_1 : The debt management (short-term debt and long term debt), firm size (total assets) and debt to equity have impact on the firm financial performance.

The p-value will be determined though the E-views 9, then it will be compared to the pvalue that is obtained with the significance value. If the p-value is greater than the significance value, the null hypothesis will not be rejected, and this implies there is an insignificant impact on the ROE. In contrast,

if the p-value obtained is smaller than the significance value, the null hypothesis is rejected and also means the independent variables has an impact on the dependent variable (ROE).

In order to test the viability or effectiveness between Pooled Ordinary Least Square (OLS) and Random Effect Model, the BG test will be utilized by deciding the absence of an explicit individual term. The OLS model will viewed as the best linear unbiased estimator (BLUE) if $\sigma^2(\epsilon) = 0$. This is because there is no autocorrelation while random effect model is consider to be BLUE if $\sigma^2(\epsilon) \neq 0$. The null hypothesis and alternative hypothesis are as demonstrated below:

$$\begin{aligned} H_0: \sigma^2(\epsilon) &= 0 \text{ (Pooled Ordinary Least Square Model)} \\ H1: \sigma^2(\epsilon) &\neq 0 \text{ (Random Effect Model)} \end{aligned}$$

When the p-value obtained are greater than significance value, the null hypothesis will not be rejected, and the test is considered insignificant. This means that the Pooled Ordinary Least Square is more reliable than the random effect model.

Hausman Test

In order to determine the freedom of the regression's impression, Hausman test will be given priority to be utilized. When the situation such as the data has an asymptotic chi-square distribution with k degree of freedom, the random effect model will be a much suitable test to be used. Conversely, fixed effect estimator will be utilized for the expansive estimation of the Hausman test. The null hypothesis and alternative hypothesis are demonstrates as follow:

$$\begin{aligned} H_0: \text{Cov}(\lambda_i, \epsilon) &= 0 \text{ (Random Effect Model)} \\ H1: \text{Cov}(\lambda_i, \epsilon) &\neq 0 \text{ (Fixed Effect Model)} \end{aligned}$$

When the p-value is greater than significance value, the null hypothesis will not be rejected. Therefore, this indicates that the random effect model has to be applied while if p-value smaller than 0.05, the fixed effect model should be applied.

Diagnostic Test

Normality Test

Normality test a method that is utilize in order to figure out if there is a well modelled data set by normal distribution. The null hypothesis and alternative hypothesis are shown as below:

$$\begin{aligned} H_0: &\text{The estimated model is normally distributed.} \\ H\alpha: &\text{The estimated model is not normally distributed.} \end{aligned}$$

When the p-value is greater than $\alpha=0.05$, hence we accept the null hypothesis. This indicated that the model is normally distributed and conversely for the opposite scenario.

Pesaran Test

Pesaran test is utilize to examine if the residuals are correlated across entities. Next, it also determines the best model for this research. The null hypothesis and alternative hypothesis are shown as below:

$$\begin{aligned} H_0: &\text{Residuals are not correlated across entities} \\ H\alpha: &\text{Residuals are correlated across entities} \end{aligned}$$

When the p-value is greater than $\alpha=0.05$, the null hypothesis will be accepted. Hence, it indicate that the residual are not correlated across the entities while the null hypothesis is rejected if the pvalue is lesser than $\alpha=0.05$ which indicate that the residual are correlated across the entities.

RESULTS AND DISCUSSIONS

Descriptive Statistics

A summarization of the observation and sample that is utilized is presented and explained. The result that are obtained through this test is shown as below:

Table 6: Descriptive Statistic result for selected manufacturing listed firms in Malaysia

Variables	ROE	TA	STD	LTD	DE
Mean	5.612958	492882.7	93669.88	54536.04	53.75021
Median	7.585000	274363.0	29050.50	17509.00	35.73000
Standard Deviation	10.78810	614117.8	159580.3	99927.25	56.47538
Minimum	-34.49000	2.655617	118.0000	2.000000	2.260000
Maximum	29.87000	11.02595	910577.0	796991.0	302.2100

Table 6 shows the descriptive statistic for dependent variables which is Return on Equity (ROE) and independent variables such as Short Term Debt (STD), Long Term Debt (LTD), Total Asset (TA), and Debt to Equity (DE). Based on the table above, mean, standard deviation, minimum and maximum value for each of the variables are presented. The mean and standard deviation of ROE is 5.612958 and 10.78810 respectively while the minimum and maximum are -34.49000 and 29.87000 respectively. Next, TA obtained a mean and standard deviation of 492882.7 and 614117.80. The minimum and maximum value are 2.655617 and 11.02595 respectively. Furthermore, STD shows 93669.88 for mean and 159580.3 for the standard deviation while minimum and maximum of 118.0000 and 910577.0 respectively. The LTD reported a mean of 54536.04 and standard deviation of 99927.25. The minimum value is 2.000000 and maximum value of this variables is 796991.0. Lastly, the mean and standard deviation for the DE are 53.75021 and 56.47538 while the minimum and maximum value are 2.260000 and 302.2100 respectively.

Correlation Test

Table 7: Pooled OLS Model result for selected manufacturing listed firm in Malaysia

Correlation Probability	ROE	LOGTA	LOGSTD	LOGLTD	LDE
ROE	1.000000 ----				
LOGTA	0.397283 (0.0000)	1.000000 -----			
LOGSTD	0.229185 (0.0003)	0.813246 (0.0000)	1.000000 -----		

LOGLTD	0.418319 (0.0000)	0.750128 (0.0000)	0.614530 (0.0000)	1.000000 -----	
DE	-0.081357 (0.2092)	0.317365 (0.0000)	0.625580 (0.0000)	0.345760 (0.0000)	1.000000 -----

Notes: 0.00 – 0.30 indicate a weak relationship, 0.31 – 0.70 indicate moderate relationship while 0.70 – 1.00 indicate a strong relationship. The figure in the bracket representing the p-value.

Based on the correlation test, it shows that the ROE and LOGTA has a correlation coefficient of 0.397283. This define that this both variables have a moderate relationship. Next, the ROE and LOGSTD demonstrated a poor relationship with a correlation coefficient of 0.229185. Other than that, ROE and LOGLTD reporting a moderate relationship with a correlation coefficient of 0.418319 while for the ROE and DE presenting a weak yet negative relationship due to the correlation coefficient value of -0.081357. Other correlation coefficient are also examined among the independent variables.

Result for Ordinary Least Square (OLS) Model

Ordinary Least Square (OLS) is utilized to test whether the independent variables (LOGSTD, LOGLTD, LOGTA and DE) give impact on the dependent variables (ROE) of the manufacturing listed firm in Malaysia. OLS model is the essential approach for the panel data estimation. The result that are obtained through this test is shown as below:

Table 8: Ordinary Least Square Model for selected manufacturing listed firm in Malaysia

Variables	Coefficient	Std. Error	t-Statistics	Probability
LOGTA	2.093176	1.302876	1.606580	0.1095
LOGSTD	0.137948	0.761946	0.181046	0.8565
LOGLTD	1.750589	0.443782	3.944706	0.0001***
DE	-0.053789	0.015580	-3.452477	0.0007***
C	-35.79756	9.354945	-3.826592	0.0002***
R-square	0.2554	30	Adjusted R-square	0.242756
F-statistics	20.15457		Prob(F-statistic)	0.0000***

Note: Coefficient level: *10%, **5%, ***1%

This result can be written as,

$$\begin{aligned}
 ROE &= \beta_0 + \beta_1 LOGTA_{i,t} + \beta_2 LOGSTD_{i,t} + \beta_3 LOGLTD_{i,t} + \beta_4 DE_{i,t} + \epsilon_{i,t} \quad (5) \\
 &= -35.79756 + 2.093176 LOGTA_{i,t} + 0.137948 LOGSTD_{i,t} + 1.750589 LOGLTD_{i,t} \\
 &\quad - 0.053789 + \epsilon_{i,t}
 \end{aligned}$$

Based on the equation above, the relationship between the dependent and independent variables are identified. Based on the table, three of the independent variables (LOGTA, LOGSTD, and LOGLTD) demonstrated a positive relationship towards the dependent variable (ROE). This define that if 1%

increase in LOGTA will cause an increase of 2.09% in ROE while for LOGSTD, it reported that 1% increase in the LOGSTD will cause 0.14% increase in ROE. Next, an increase of 1% of LOGLTD will impact on an increment of 1.75% in ROE. Lastly, for DE it showed a negative relationship towards ROE where an increment of 1% in DE will cause a decrease of 0.05% in ROE. Other than that, we can figure out that LOGLTD and DE is statistically significant at 5% level of significance with the probability of 0.0001 and 0.0007 respectively. Next, it is also proven that LOGTA and LOGSTD is the independent variable which shows no significance on the ROE at any level of significance with the probability of 0.1095 and 0.8565 respectively. Lastly, the probability value of F-statistics is 0.0000 which are smaller than 0.05. Therefore, the overall model is significant at 5% level of significance.

Result for Random Effect Model

Random Effect model is utilize to investigate or examine how a particular group or time interval influence the error variance [$Cov(\lambda_i, \varepsilon) = 0$]. The result for this random effect model are demonstrated below:

Table 9: Random Effect Model for selected manufacturing listed firm in Malaysia

Variables	Coefficient	Std. Error	t-Statistics	Probability
LOGTA	0.646516	1.460491	0.442670	0.6584
LOGSTD	1.220111	0.836816	1.458040	0.1462
LOGLTD	1.296437	0.438298	2.957889	0.0034**
DE	-0.094766	0.018968	-4.996062	0.0000***
C	-22.12607	11.81698	-1.872396	0.0624*

Note: Coefficient level: *10%, **5%, ***1%

The result can be written as,

$$\begin{aligned}
 ROE = & \beta_0 + \beta_1 LOGTA_{i,t} + \beta_2 LOGSTD_{i,t} + \beta_3 LOGLTD_{i,t} + \beta_4 DE_{i,t} + \varepsilon_{i,t} \quad (6) \\
 = & -22.12607 + 0.646516 LOGTA_{i,t} + 1.220111 LOGSTD_{i,t} + 1.296437 LOGLTD_{i,t} \\
 & - 0.094766 DE + \varepsilon_i
 \end{aligned}$$

Based on the equation above, the result demonstrated that LOGTA, LOGSTD and LOGLTD are positively influence the dependent variable (ROE). This means that when 1% increase in LOGTA, the ROE will be increased by 0.65% while 1% increase in LOGSTD, the ROE will increase by 1.22%. Next, when 1% of LOGLTD increase, the ROE will increase by 1.30%. Meanwhile for DE, the result shows a negative influence on the ROE. This means that 1% increase in DE will cause ROE to decrease by 0.09%. Random Effect Model is verified after the hypothesis testing is conducted. The hypothesis for Random Effect Model are reported below:

- H_0 : The LOGTA/LOGSTD/LOGLTD/DE have no impact on ROE.
 H_a : The LOGTA/LOGSTD/LOGLTD/DE do have impact on the ROE

When the p-value is less than the level of significance (5%), the null hypothesis will be rejected and in this scenario we can conclude that the independent variables have impact on the dependent variables. In contrast, when the p-value is greater than the level of significance (5%), accept the alternative hypothesis. Based on the testing that are conducted, the independent variables LOGLTD and DE shown

a significance at the level of 5% with the probability of 0.0034 and 0.0000 respectively. Meanwhile, only LOGTA and LOGSTD does not demonstrated any significance on the ROE where the p-value shows are 0.6584 and 0.1862 respectively which is greater than 0.05 of level of significance.

Result for Breusch and Pagan Lagrangian Multiplier

The BP Test is utilized in order to test the effectiveness among Pooled OLS and the Random Effect Model by determining the absence of a specific individual term. The OLS model is consider the best linear unbiased estimate (BLUE) if the $\sigma^2(\epsilon) = 0$. The hypothesis of this test is shown as below:

$$H_0: \sigma^2(\epsilon) = 0 \text{ (Pooled OLS model)}$$

$$H_a: \sigma^2(\epsilon) \neq 0 \text{ (Random Effect model)}$$

Table 9: Breusch Pagan for selected manufacturing listed firm in Malaysia

Breusch Pagan	Test Hypothesis		
	Cross-section	Time	Both
	39.24137	7.666216	46.90758
	(0.000)	(0.0056)	(0.0000)***

Note: Coefficient Level, **5%, ***1%

Based on the table above, we can figure out that the p-value of the test is 0.0000 which is less than 0.05. Therefore, the null hypothesis is rejected. Meanwhile for the Chi-square statistic, it demonstrated a value of 46.90758, where it exceed the critical value. Hence, we have enough evidence to reject the null hypothesis. Thus, it is proven that the random effect model is a suitable model to be utilized.

Result for Fixed Effect Model

Fixed effect model is utilized to test the differences of group in intercepts [$Cov(\lambda_i, \epsilon) \neq 0$]. The results for Fixed Effect model are demonstrated below:

Table 10: Fixed Effect Model for selected manufacturing listed firm in Malaysia

Variables	Coefficient	Std. Error	t-Statistics	Probability
LOGTA	-4.293152	2.033061	-2.111669	0.0359**
LOGSTD	2.016492	0.993227	2.030242	0.0436**
LOGLTD	1.122573	0.496558	2.260709	0.0248**
DE	-0.160247	0.026784	-5.982851	0.0000***
C	36.92136	20.19326	1.828400	0.0689*

Note: Coefficient level, *10%, **5%, ***1%

The result can be written as,

$$ROE = \beta_0 + \beta_1 LOGTA_{i,t} + \beta_2 LOGSTD_{i,t} + \beta_3 LOGLTD_{i,t} + \beta_4 DE_{i,t} + \varepsilon_{i,t} \quad (7)$$

$$= 36.92136 - 4.293152 LOGTA_{i,t} + 2.016492 LOGSTD_{i,t} + 1.122573 LOGLTD_{i,t} - 5.781226 + \varepsilon_{it}$$

Based on the equation above, the result demonstrated that LOGSTD and LOGLTD are positively influence the dependent variable (ROE). This means that when 1% increase in LOGSTD, the ROE will increase by 2.02%. Next, when 1% of LOGLTD increase, the ROE will increase by 1.12%. Meanwhile for LOGTA and LOGDE the result shows a negative influence on the ROE. This means that 1% increase in LOGTA will cause ROE to decrease by 4.29% while 1% increase in DE will cause a decrease in 0.16% of ROE. The hypothesis testing for Fixed Effect Model test are reported below:

H_0 : The LOGTA/LOGSTD/LOGLTD/DE have no impact on the ROE.
 H_a : The LOGTA/LOGSTD/LOGLTD/DE do have impact on the ROE.

When the p-value is less than the level of significance (5%), null hypothesis will be rejected and this conclude that the independent variables do have impact on dependent. All of the independent variables showed a significance impact on the ROE at 5% level of significance with the probability value of 0.0359, 0.0436, 0.0248 and 0.0000 respectively.

Result for Hausman Test

This test is utilized in order to test the Random Effect Model and Fixed Effect Model. The result is shown as below:

Table 11: Hausman Test for selected manufacturing listed firm in Malaysia

Variables	Coefficient		(b - B)	Probability
	(b)	(B)		
	Fixed	Random	Var (Diff)	
LOGTA	-4.293152	0.646516	2.000303	0.0005
LOGSTD	2.016492	1.220111	0.286240	0.1366
LOGLTD	1.122573	1.296437	0.054465	0.4563
DE	-0.160247	-0.094766	0.000358	0.0005
Chi ² (4)	(b-B)'[(V _b -V _B) ⁻¹](b-B)			
=	33.652655			
Chi2 > Probability	0.0000			

b = consistent under H_0 and H_a : obtained from excel

B = inconsistent under H_a , efficient under H_0 : obtained from excel

Note: Coefficient level: **5%, ***1%

The hypothesis of this test is demonstrated as below:

H_0 : $COV(\lambda_i, \varepsilon) = 0$ (Random Effect Model)

H_a : $COV(\lambda_i, \varepsilon) \neq 0$ (Fixed Effect Model)

When the p-value is less than 0.05, the null hypothesis will be rejected and indicate that fixed effect model is more suitable compare to random effect model. Since the result obtained shows that the probability value of the Chi-square is 0.000 which is smaller than 0.05, therefore we reject null hypothesis. Hence, fixed effect model is chosen as the best and suitable model in selected manufacturing sector listed firms under Bursa Malaysia.

Diagnostic Test on Random Effect Model

Result for Normality Test

This test is utilized to examine the normality of error term in the random effect model.
Table 12: Normality Test for selected manufacturing listed firm in Malaysia

	Jarque – Bera Statistics
No. of Firms: 30 No. of Observation: 240	26.92464 (0.0001)***

Note: Coefficient level: **5%, ***1%

The hypothesis for normality test is shown as below:

H_0 : The estimated model is normally distributed.
 H_a : The estimated model is not normally distributed.

When the probability obtained is smaller than 0.05, the null hypothesis is rejected and this indicate the estimated model is not normally distributed. Based on the outcome, the probability reported was 0.0000 which is less than 0.05, therefore the null hypothesis is rejected. In conclusion, the estimated model is not normally distributed. Any observation that is more than 100 is consider as a large sample size, hence we can assumed that the error term is normally distributed as in accordance with central limit theorem.

Result for Pesaran CD Test

This test is utilized to examine whether the residuals were correlated across entities.
Table 13: Pesaran Test for selected manufacturing listed firm in Malaysia

Test	Statistic	Probability
Pesaran CD	1.301223	0.1932

Note: Coefficient level: **5%, ***1%

The hypothesis for Pesaran test is shown as below:

H_0 : Residuals are not correlated across entities
 H_a : Residuals are correlated across entities

Based on the result above, the p-value shows 0.1932 which is greater than 0.05 and therefore the null hypothesis is not rejected. Hence, the residuals are not correlated across the entities.

CONCLUSIONS AND LIMITATIONS OF THE STUDY

The research is conducted to provide an insight on the relationship between capital structure and firm financial performance among selected listed manufacturing firms on Bursa Malaysia. The finding of

this research shows that the firm size and debt to equity have negative relationships with return on equity (ROE). Further, it is found that the short term debt and long term debt shows positive effects on return on equity. This indicate that when the debt increase, the equity will shrink. Since the equity is the denominator of the return on equity (ROE), therefore it will boost up return on equity (ROE). The results are hence perceived as contributing towards better understanding on the effects of capital structure on firm performance in the Malaysian context.

In terms of limitation of the study, the findings of the study should not be generalized to other sectors or industries on the Bursa Malaysia. Next, since the time frame in this research is 8 years from 2010 to 2017, therefore, the results for the years before and after are unknown. As such future studies may consider to examine different time frame and/or include other sectors or industries on Main board of Bursa Malaysia

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