

Leverage Behavior of Malaysian Manufacturing Companies a Case Observation of the Industrial Sector's Companies in Bursa Malaysia

Maryam Paydar

*Faculty of Business Management
Universiti Teknologi, Kuala Lumpur, Malaysia
E-mail: pmaryam2@live.utm.my*

Barjoyaibin Bardai

*Professor, Graduate School of Business
Universiti Tun Abdul Razak, Kuala Lumpur, Malaysia
E-mail: barjoyai@unirazak.edu.my*

Abstract

This paper examines the capital structure for the manufacturing companies listed in the Bursa Malaysia market based on data obtained from annual reports of 117 manufacturing companies during a seven-year period from 2004 to 2010. In this study, the determinants of capital structure in Malaysian industrial sector are investigated with reference to major capital structure theories of Pecking Order theory and Trade-off theory. This study utilized quantitative data. Six independent variables were analyzed to measure their effects on debt ratio. In addition, a macro-economic variable was also examined to assess the effect of GDP rate on debt. Multiple regression is run as tool of analysis. The result reveals that among all the possible explanatory variables, only three variables which are tangibility, profitability and liquidity affect the capital structure. The results also indicate that size, growth and risk variables have insignificant effect on leverage ratio. There is no evidence found to support the influence of GDP rate as a macroeconomic indicator on debt ratio.

Keywords: Capital Structure, Leverage Ratio, Manufacturing Companies

JEL Classification Code: G32

1. Introduction

An important consideration in financial decisions is determining optimal level of capital structure since a right choice can maximize shareholder's value. This corporate finance decisions can lead to the success or the failure of a business. Poor management of capital structure will result in poor performance of a firm. In today's business world, companies need to be supported by finance activities in order to meet their working capital requirements and investment activities. The financial sources for companies are different, they can be supported by internal or external resources. However, it is the concern of financial managers to decide the right choice of finance to fund the business. Thus, many important factors should be taken into account when a company designs its capital structure. Owing to

the fact that each country has its own particular situation of the business, the specific nature of industries and the regulatory system, the capital structure decision of firms can be influenced by the environment in which they operate. Deesomsak and Paudyal (2004) studied the Asia Pacific region, in four countries with different legal, financial and institutional environments. Their conclusions suggest that the importance of the determinants of capital structure varies across countries in the region which may affect managerial decisions. It is also cited that the capital structure decision is not only the product of the firm's own characteristics but also the result of the corporate governance, legal framework and institutional environment of the countries in which the firm operates. Titman and Twite (2010) also examined the impact of institutional environment on leverage structure in 39 developed and developing countries. They concluded that the legal and tax system, the level of corruption and the preferences of capital suppliers of countries have a significant impact on the leverage ratios. Therefore, conclusions from theoretical and empirical research carried out in developing economies may not be applicable for other emerging markets. Thus, the further research needs to be carried out to understand the determinants of capital structure in particular institutional settings or countries.

Malaysia is considered as an emerging market where the literature on the determinants of capital structure is sparse. The choice of Malaysian manufacturing companies is due to the fact that the industrial sector plays a very significant role in the economy of Malaysia and manufactured products accounted for more than 80% of the country's total gross exports, but what is interesting to note is that the industrial sector incurred the most damage during the financial crisis, and this is not a good news since Malaysia is an export based country. During the peak of the economic crisis, Malaysia's exports decreased by 28% in Jan 2009 and it was the biggest drop in the history of the country since 1982. Although we have observed two different features of capital structure during the two periods of Asian and Global financial crisis, the economy of Malaysia has been hit by both Asian financial crisis in 1998 and present financial crisis. This paper is an attempt to understand capital structure behavior of Malaysian manufacturing companies during 2004-2010. Thus, the sample period straddles across the early 2007 global crisis. The objective of this study is to examine the influence of different explanatory variables on the corporate debt ratio. In this paper the determinants of capital structure is investigated with reference to the predictions drawn by Pecking Order theory and Trade-off theory. Since the topic of optimal level of capital structure is considered as one of the most important issues in finance, we hope the results of this study can assist financial managers and regulators in forming the best policy in deciding process.

2. Literature Review

2.1. Capital Structure Theories

The topic of capital structure still remain one of the most important issues in modern corporate finance. Although a number of capital structure theories have been developed in the recent years, there has been disagreement about capital structure theories.

Modigliani and Miller were the first to investigate about determinants of capital structure. They propounded the theory of "Capital Structure Irrelevant" and remarked situation where financial leverage does not impact on the value of firms. They argued that the value of firm is independent when there are no bankruptcy costs and tax-subsidies on the payment of interest (Jenson 1976). The earlier assumption reconsidered by Modigliani and Miller (1963) suggests that advantage of tax allows firms to benefit from tax- deductible expense because interest payments are tax deductible. Therefore, it can be said that "tax shield" helps companies to pay lower level of tax. Based on Modigliani and Miller's suggestion, firms should use as much as debt possible in their capital structure in order to maximize their value. The ration of Trade-off theory can be justified by interpreting the principle that companies generally apply the different external financial resources such as debt and equity. The advantage of borrowing allows companies to attain tax shield which means a company needs to pay the lower tax when they have used the higher debt.

Pecking Order Theory indicates that firms prefer to fulfill their financing needs by benefiting from its internal resources. It means that retained earnings should be accounted as the main source of financing. If internal financing is not sufficient to meet the needs of firms, external financing will be preferred. To do this, first they apply for a bank loan, followed by public debts and finally firms choose equity financing as the last resort. However, many profitable firms rarely choose debt financing for new projects since they have sufficient funds in the form of retained earnings (Jensen 1976).

Signaling Effect Theory implies another theory of capital structure which is suggested by Ross in 1997. The Signaling Theory is based on asymmetric information which describes the higher rate of debt is perceived as a signal of higher quality which results in higher cash flows in future. This theory also points that lower quality firms are more prone to costs of bankruptcy, therefore, they are unable to mimic higher quality firms by taking on more debt (Hulle 2004).

The theory of Agency Costs implies that an optimal level of capital structure can be defined by minimizing the costs arising from the conflict between shareholders and managers' interests. According to Jensen and Mackling (1976), Agency Costs theory indicates the conflict of interest between shareholders and bondholders. Managers are assigned by the shareholders to manage firms with the purpose of increasing firms' value and shareholders. However, the problem arises when managers attempt to act on their own interest which is in contrast with the firm's policy (Jensen 1986). pointed that agency costs are associated with free-cash flow and proposed that free cash flow problem should be controlled by increasing ownership of the managers or increasing debt in the capital structure.

2.2. International Evidence

In Egypt, Ebaid (2009) investigated the impact of capital structure choice in firm's performance. The results indicate that profitability is negatively related to capital structure when the return on asset is the measure of firm's profitability.

In Jordan, Shubiri (2010) considered the characteristics of capital structure of 59 industrial Jordanian listed companies to Amman Stock Exchange for the period from 2004 to 2007. The results show that there is a positive relationship between firm's size, tangible asset, growth rate, and non-tax shield and the results also reveal a negative significant relationship between profitability and leverage.

In Turkey, Caglayan and Sak (2010) in their investigation on the determinants of capital structure of 25 deposit banks find a positive relation between size, market to book and leverage. Meanwhile the results suggest a negative relationship between profitability, tangibility and leverage ratios.

Mashar and Nasr (2010) conducted a study among the Pakistani companies registered in Islamabad Stock Exchange. They studied 80 private and 11 government owned companies for the period of 1999 – 2006. They concluded that asset tangibility, profitability and return on asset have negative relationship with leverage. The results also show a positive relationship between size, growth, tax rate and debt.

In India, Mishra (2011) investigated the factors that affected Indian central PSUs. The results indicate that the capital structure of the profit making manufacturing PSUs is affected by asset tangibility, profitability and tax. The results affirm that tangibility and growth have positive effect on leverage ratio while profitability and Tax have negative effect on capital structure. There was no evidence found to support the significant relation between non-debt tax shield, Volatility, Size and capital structure.

In Nigeria, Hassan (2011) examined the characteristics of capital structure in Nigerian listed insurance companies for the period of 2001-2010. The results affirm a negative relationship between profitability, size and leverage which support the prediction of the Pecking Order theory. The findings also show a positive relationship between asset tangibility and leverage which is consistent with the prediction of the Trade-off theory.

Abu Sayeed (2011) conducted a study on determinants of capital structures among 46 Bangladeshi listed companies. The results reveal that agency costs are negatively related to the total

debt ratios and tax rate is positively correlated to long- term debt and non-debt tax shields. The results also indicate that Size and tangible assets have positive effect on debt ratio. The findings show that bankruptcy cost and profitability are not relevant in determining leverage ratios while industry characteristic is recognized as a significant factor in determining debt ratios.

2.3. Malaysian Evidence

Salwani and Wan Mansor (2007) in their study on 22 listed construction companies in Malaysia from 2001 to 2007 concluded that profitability and asset tangibility are two important characteristics of capital structure and size, tangibility, growth are positively correlated with capital structure.

Pratomo and Ismail (2007) examined the performance and capital structure of 15 Malaysian Islamic Banks between 1997 and 2004. They suggest that the choice between debt and equity financing can be determined by the optimal level of capital structure. The result of their study is in line with the agency hypothesis which states the higher leverage or a lower equity capital ratio is associated with higher profit efficiency.

Pandey et al (2007) conducted a study regarding to the relationship between capital structure and market structure among 208 Malaysian companies .The result indicates a saucer-shaped relationship between capital structure and profitability due to the interaction between agency costs, costs of external financing and the interest-tax shield. The results also show a positive relationship between size, assets, tangibility and capital structure, while growth, risk and ownership have negative relationship with capital structure.

Kila and Wan Mansor (2009) investigated the characteristic of capital structure of 17 Malaysian's public listed companies. They concluded that size, liquidity and interest coverage ratio are negatively correlated with total debt ratio.

Baharuddin and Khamis (2011) examined debt and equity structure of 22 public listed companies in the construction sector in the Bursa Malaysia. They reported that there is a positive relationship between size, growth and assets tangibility and total debt ratio. However, there is no evidence found to support a negative relationship between the profitability and debt ratios.

3. Characteristic of Capital Structure

Leverage ratios are indicators that assess a firm's capital structure. In the emerging markets and developed countries, it is quite common for firms to employ both long- term and short- term debt in their financing activities. Therefore, it is more reasonable to use total debt ratio as a proxy of capital structure. In this study, two measures are employed as the proxy of capital structure. The financial leverage is determined by two proxies. The first proxy of capital structure is total debts to total assets and the second one is identified by short-term debts to total assets. Thus, the proxy of financial leverage is defined as below:

Total Debt Ratio = Total Debt / Total Assets

Short-term Debt Ratio = Short-term Liabilities /Total Assets

Size is considered to be the first important characteristic of firm. The Trade-off theory proposes that the larger a firm is, more needs have to be diversified and this is the reason for it to apply more leverage in its capital structure. This theory also proposes that larger firms can reduce bankruptcy costs by diversifying their businesses. Therefore, from the perspective of trade- off theory, it can be said that there is a positive relationship between the size of firm and leverage. However, according to the finance theories discussed in previous works, the effect of firm's size on leverage is unclear. Many empirical studies have shown a mixed result. For example, Rajan and Zingales (1995) reported a positive relationship between firm's size and leverage in the US, UK, Japan and Canada, while the result of their study in France show a negative relationship. Titman and Wessels (1988) find no such relationship in the US. Deloof and Verschueren (1998) suggest a positive relationship between size and

leverage in companies in Belgium, under the aforementioned assumptions, this study assigns size as one of the determinants variables of capital structure. A positive relationship between the size of firm and leverage ratio can be then predicted. Total assets can be used as the proxy of the company size. Thus, the hypothesis to determine whether the Pecking Order theory is pertinent in Malaysia is stated as:

H1: There is a negative relationship between leverage ratios and size.

Profitability is considered as another important characteristic of firms that can affect capital structure. Based on the Pecking Order theory, companies prefer to be financed by their internal resources. Retained profits are viewed to be the first option, then debt is considered as the next option, and finally the new equity will be the last resort. As a result, firms with high level of profitability should have the low level of debt. Therefore, according to The Pecking order theory, there is a negative relationship between profitability and leverage. In contrast, the Trade-Off theory depicts a positive relationship between profitability and leverage because the theory states that companies with high level of profitability can mitigate the risk of bankruptcy. It also discusses that profitable companies can use more debt to take advantages of the tax-shield. Empirical evidences from previous studies seem to be in line with the pecking order theory. The results of most studies show negative relationship between profitability and leverage. For instance, the results of studies by Cassar and Holme (2003) Hall (2004) affirm a negative relationship between profitability and leverage. However, the finding of Petersen and Rajan (1994) is inconsistent with PeckingOrder theory because they reported a positive relationship between profitability and leverage. This study assigns profitability as another determinant of capital structure. Akhtar (2004) measured profitability by dividing net profit with sales. Mazur (2007) used the same criteria to measure profitability. Mira (2005) applied EBIT to total asset. This study measures profitability by dividing net profit to sales because net profit figure has significant impact on financial decision making compared to EBIT. Therefore,

Profitability = Net Profit / Total Sales

Thus, the following alternative hypothesis is used to test whether the Pecking order theory is relevant in Malaysian context:

H2: There is a negative relationship between leverage ratios and profitability.

Profit as a proxy for company's risk is deemed to have negative impact on leverage. In particular, based on the Trade-Off theory, the cost of financial distress can be increased by risk, while the tax shield can be reduced. According to the Pecking Order theory, there is a negative relationship between risk and debt. Empirical evidences are not clear about the relationship between leverage and risk. For instance, Titman and Wessels (1988) show a negative relationship between risk and leverage. However, Bennet and Donnelly (1993) report a appositive relationship between risk and leverage. Thus, in this study, risk is defined by sale on operating income.

Risk = Sale /Operating Income

Therefore, the alternative hypothesis is used to examine whether the Pecking order theory is consistent with Malaysian contexts:

H3: There is a negative relationship between leverage ratios and risk.

The literature is not unambiguous about the relationship between growth of firm and leverage. Based on the Trade-Off theory, growth firms use less debt because there are chances to increase the cost of costs of bankruptcy. According to Pecking Order theory, growing firms prefer to opt for debt rather than equity. Therefore, a positive relationship is predicted between growth and leverage and hence, internal resources are not adequate to fill the needs of these companies. The Pecking Order theory would suggest that growth firms tend to hold more debt. Empirical studies present mixed evidence. Rajan and Zingales (1995) show a negative relationship between growth and leverage. However, Titmanand Wessels (1988) no found any relationship between growth and leverage. Baharuddin and Khamis (2011) report a positive relationship for Malaysian companies. In this study firm's growth is measured by the percentage change in sale during that year and this way we lose the first year of data for our models. Thus

Growth = Percentage Change in Sale

The alternative hypothesis used to examine whether the Pecking order theory is related with Malaysian context is as follow:

H4: There is a positive relationship between leverage ratios and growth.

The asset structure of a company has an important impact on its capital structure. Titman and Wessels (1988) argue that the degree which the companies' assets are intangible would be dependent on having greater liquidation value. Bradley et al (1984) affirms that companies with the higher level of investing in tangible assets have higher financial leverage because they applied debt at lower interest rates since their debt can be secured with tangible assets. Wedig et al (1988) discusses that if the assets are to serve as collateral, it may be easier to use debt. In other words, tangible assets can be applied as collateral. Thus, in the case of bankruptcy, the risk of a creditor can be reduced and the value of assets can be increased by the higher level of intangibility. Booth et al (2001) argues that companies with the higher level of intangibility have greater ability to issue secured debt. Hence, a positive relationship between leverage and asset tangibility is suggested. Berger and Udell (1988) discuss that in order to use bank financing, it is important to be able to secure the lending by tangible assets.

Empirical evidences from the study by these scholars and researchers such as Bradley (1984), Wedig (1988), Rajan and Zingales (1995), Titman and Wessels (1988), Hovakimian (2004) show positive relationship between asset structure and leverage for the companies. However, the findings of studies by Booth et al (2001), Huang and Song (2006) suggest a negative correlation between tangibility and leverage. In this study, firm's capital structure is defined as asset tangibility and liquidity and they are measured by fixed-asset ratio and current asset ratio. Thus,

Tangibility = Fixed Assets / Total Assets

Liquidity = Current Assets / Current Liabilities

The below alternative hypotheses is used to examine whether the Pecking order theory is related with Malaysian context:

H5: There is a positive relationship between leverage ratios and tangibility.

H6: There is a negative relationship between leverage ratios and liquidity.

4. Research Methodology

4.1. Data

This study utilizes quantitative data. The process of collecting data is based on the secondary data which is derived from the annual reports taken from the official website of the Bursa in Malaysia. Two financial statements which are the balance sheet and income statement are collected from the annual reports. The period of study is from 2004 to 2010 (between pre and post global crisis period). For the purpose of this study, 117 public listed companies that are involved in the manufacturing sector are selected. The criteria used for choosing the companies were the availability and quality of data for a time period of 7 years (2004-2010). The data set used in this analysis is chosen from all market in Bursa. Sample size is shown in Table 1.

Table 1: Sample size

No	Sector	Number of Observations	Number company selected	Number of years covered
1	INDUSTRY	274	117	7
2	Total	274	117	7

4.2. Specification of the Model

Multiple Regression Model is run in order to test the theoretical relation between the financial leverage and determinants of capital structure. SPSS software is used to do the statistical analysis. Both

descriptive and quantities analysis are employed to interpret the capital structure behavior of manufacturing sector in Malaysia. The trend of each determinant of capital structure is shown by the year-to-year descriptive analysis of determining the mean and standard deviation. The statistical tests employed in our quantitative analysis are correlation and regression analysis. The average of each variable for the seven year period of 2004 -2010 is used to present the overall picture.

The model used in our study is as follows:

$$\text{Leverage} = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 \dots + e \quad (1)$$

Where

A =Constant term of model

B= Coefficient

E = the random error term

X1 = Size of the firm

X2 =Profitability

X3 = Risk

X4 =Growth rate

X5 = Tangibility

X6 = Liquidity

X7 = Economic growth rate

5. Results and Discussions

5.1. Descriptive Data Analysis

The analysis provides a descriptive statistic on dependent variable and independent variables with minimum, maximum, mean and standard deviation presented in Table 2.

Table 2: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
TDR	117	.05	1.82	.4311	.25477
SDR	117	.04	3.37	.3394	.35632
TANG	117	1.64	73.25	36.0519	15.30535
ROA	117	-39.15	26.67	1.7733	8.05330
RISK	117	-84.84	2051.41	36.7586	194.20717
GROWTH	117	-43.62	2914.52	39.0940	270.15980
SIZE	117	58165.71	1.00E9	1.2138E8	1.70297E8
LIQUIDITY	117	.49	80.80	4.5539	9.98696
GDP rate	117	4.93	4.95	4.9383	.00331

Table 2 indicates that the average leverage of Malaysian manufacturing sector is 0.43. It means that Malaysian manufacturing firms are applying 43% debt on the average in their capital structure. From the above table, the average of short-term debt is accounted for .3394, tangibility (TANG) 36.05, profitability (ROA) 1.77, risk 36.75, growth 39.09, liquidity 4.55 and GDP 4.93. The average of size in manufacturing sector is reported for 1.2138E8.

5.2. Analysis of Regression Results

In this research, Multiple Regression Model has been applied. First, the bivariate correlations among the independent variables are used to ensure the multi-collinearity problem. There has been no significant multi-collinearity problem found. Next, the multiple regressions in SPSS is run to test the set hypotheses. Table 3 shows the correlation matrix of explanatory variables and presents the result of preliminary analysis.

Table 3: Spearman's Correlation Coefficient

Variables	TDR	SDR	TANG	ROA	RISK	GROWTH	SIZE	LIQUIDITY	GDP Rate
TDR	1.000								
SDR	.822**	1.000							
TANG	.237*	-.324**	1.000						
ROA	-.267**	-.190*	-.067	1.000					
RISK	.073	-.043	-.051	.100	1.000				
GROWTH	-.005	-.111	.081	.238**	.123	1.000			
SIZE	-.058	-.046	.054	.095	.041	.039	1.000		
LIQUIDITY	-.797**	-.011	-.290**	.299**	.037	.103	.101	1.000	
GDP rate	.089	-.023	-.113	-.094	.027	-.076	-.007	-.068	1.000

** Correlation is significant at the 0.01 level

*correlation is significant at the 0.05 level

The results presented in table 3 above affirm that tangibility has positive correlation with leverage (TDR) and this relation is negative when the proxy of financial leverage is SDR. This positive relation between tangibility and TDR explains that an increase in tangibility that leads to the increase in the leverage rate (TDR). The negative relation between tangibility and leverage (SDR) indicates companies decrease their debt rate when the tangibility increases. The results of Spearman's Correlation Coefficient also confirms that profitability (ROA) and liquidity have significant and negative correlation with leverage. It can be explained that an increase in profitability and liquidity will result in the decrease in debt and vice versa. The results of this study suggest insignificant and positive correlation between risk, GDP rate and leverage (TDR) and negative and insignificant correlation between risk, GDP rate and leverage (SDR). The findings also indicate insignificant and negative correlation between growth, size and leverage (TDR, SDR). Findings and expected results are summarized in table 4.

Table 4: Summary of the Findings and Expected results

Variables	coefficient		Expected relation based on Pecking order theory	Expected relation based on Trade-off theory
	TDR	SDR		
TANG	+	—	Positive	Positive
ROA	—	—	Negative	Positive
RISK	+	—	Negative	Negative
GROWTH rate	—	—	Positive	Negative
SIZE	—	—	Negative - Positive	Positive
LIQUIDITY	—	—	Negative	Positive

The empirical results agree with previous studies only for the three determinants of capital structure (Tangibility, profitability and liquidity). None of the other variables such as risk, growth and size are found to be significant. The negative relation of size is inconsistent with the result of some other countries; however a study conducted on Belgian companies shows negative relation between size and leverage. The proxy of financial leverage and size is the same in this study as well as for the Belgian companies. In Nigeria, Hassan (2011) also suggested a negative relation between size and leverage. The proxy of size in his study is turnover.

In Malaysia, Kila (2008) also found a negative relation between size and leverage. He argued about unique characteristic of Malaysian capital structure. Kila recorded a figure of 0.309 as R². He also revealed that there was a significance differentiation in the result when companies applied a larger portion of leverage compared to those firms that maintain lower debt ratio. He found that the R² peaked from 0.309 to 0.517 when companies employed above 30% leverage in their financing activities. Negative and insignificant relation between size and debt ratio are found in this study. The

insignificant relation can be attributed to industry effect and period effect. Generally, previous studies in other countries suggest positive relationship between size and leverage. In contrast to this study, other studies in Malaysia, for instance, Pandey (2004) and Baharuddin (2011) found positive relation between size and leverage. Nevertheless, both results indicate a stronger R² (0.4848 and 0.3872) compared to the finding (0.324) of this study. However, some differences that can affect results should be considered. Firstly, period effect can change the result of this study; Pandey conducted his study for period of 1993-2000 (pre and post Asian crisis period). It has been discussed that the importance of determinants of capital structure can be different between pre and post crisis period as it is demonstrated in the Asian pacific study. In addition, the feature of capital structure has been different for two periods of 1997 and 2007 recessions. Another factor that should be considered is the industry effect. As examined by Baharuddin (2011) in his study regarding capital structure, the construction companies are heavily dependent on debt financing, thus he report the weak figure of 0.3872 as R² in his finding.

This study also no finds signs of significant relationship among three determinants of capital structure which are risk, size, and growth. As discussed earlier, the importance of determinants of capital structure is different for each different country. For instance, the size of company has no effect onto the Singaporean companies. The results of studies in Nigeria and Nepal present a negative and significant relation between size, growth and leverage. In Nigeria, Hassan (2011) recorded a strong figure of R² (78%), while there is no found a significant relation between size, growth and leverage in our study, however it should be considered that the nature of manufacturing company is different from insurances companies which Hassan (2011) operated his study. Previous literatures indicate that finance theory is not clear about its prediction of the effect of firm's size on leverage. Empirical studies show the mixed results. Rajan and Zingales (1995) report the positive relationship for the US, UK, Japan and Canada, while the result of their study in France predict the negative relation between firm's size and .Titman and Wessels (1988) find no relationship for the US. Mishra (2011) reported the same result for the case of Indian manufacturing companies. Table 5 indicates the regression results of equation one when TDR (Total debt to total asset) has been employed to proxy leverage.

Table 5: Summary of Regression Result

Variables	B	Std. Error	t	Sig.
(Constant)	-47.236	30.387	-1.554	.123
TANG	.003	.001	2.495	.014
ROA	-.012	.003	-4.657	.000
RISK	-6.458E-5	.000	-.608	.544
GROWTH	8.689E-5	.000	1.122	.265
SIZE	-3.096E-11	.000	-.253	.801
LIQUIDITY	-.007	.002	-3.613	.000
GDP rate	9.640	6.152	1.567	.120

Table 5 above displays the summary of estimated regression model:

$$\text{TDR} = -47.238 - 3.096\text{E-}11(\text{SIZE}) - 0.012(\text{ROA}) - 6.458\text{e-}5(\text{RISK}) + 8.689\text{E-}5 (\text{GROWH}) + 0.003(\text{TANG}) - 0.007 (\text{LIQUIDITY}) + 9.640 (\text{GDP rate}) + e$$

The results demonstrate that the estimated model of the study is not well fitted because all variables are not significant in determining the dependent variable (TDR). In other words, judging from p-value the coefficient of all variables is not significant. Thus, tangibility, profitability and liquidity are significant, whereas other independent variables are insignificant. Based on results derived from table 6, it can be concluded that the coefficient of determination (R²) is recorded at 0.324 which indicates that only 32.4% of leverage can be explained by the variables chosen. It can be explained that the cumulative effect of all variables put together can adjust the dependent variable up to 28% as indicated by the Adjusted R Square and remaining is affected by other factors.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.569a	.324	.280	.21623

In this stage, Analysis of Variance is used to check how well the model fits the data. It can be judged that the value of the F statistic is larger than 0.05 then the independent variables cannot explain the variation in the dependent variable (TDR). Back to table 6, the value-statistic of F is reordered at 7.378 which is larger than 0.05, thus the model is failed to accept statistically.

Table 7: ANOVA

Model 1	Sum of Squares	DF	Mean Square	F	Sig.
Regression	2.415	7	.345	7.378	.000a

Based on above discussion, our final model is stated as follow:

$$\text{TDR} = -47.230 + 0.003 (\text{TANG}) - 0.012(\text{ROA}) - 0.007 (\text{LIQUIDITY}) + e$$

Finally, we draw conclusion that an increase in profitability by 1% will reduce leverage (TDR) by 0.012 points respectively. It can be discussed that an increase in liquidity by 1% will decrease leverage rate (TDR) by 0.007 points. Meanwhile, increase in size will lead to leverage appreciating by 0.003 points. Based on the result, tangibility, measured by fixed asset to total asset is positively related to debt ratio and it reveals that companies with having more tangible fixed asset depend more on leverage financing. The results also suggest that tangibility has the most significant influence on leverage due to highest t-statistics of 2.495 Compared to other independent variables.

6. Conclusion

The findings of this paper contribute towards a better understanding of leverage behavior of manufacturing companies in Malaysia. Six explanatory variables namely tangibility, profitability liquidity, risk, size, growth were used to measure their effect on capital structure among the manufacturing companies. Another macro-economic factor (GDP rate) as independent variable has been added to discover whether capital structure of industrial sector is affected by GDP rate during the global crisis. Based on availability of data, the number of 117 manufacturing companies is selected as the sample size. This study utilizes quantitative data. Spearman's correlation and multiple regression analysis are used for the purpose of analyzing. The research aims to understand the relation between capital structure and its important determinants. The literature is presented based on two important theoretical discussions of Pecking order and Trade-off theories. This paper is also an attempt to answer the question whether capital structure of Malaysian manufacturing companies is adjusted with Pecking Order theory or Trade-off theory. The six hypotheses of this study are stated based on Pecking Order theory. The results suggest that tangibility is positively related to capital structure and other two variables of liquidity and profitability are negatively correlated with leverage ratios. These results are consistent with suggestions of Pecking Order theory. The significant level of tangibility is 5% while the level for liquidity and profitability is 1%. The findings also indicate that the capital structure of manufacturing Malaysian companies is affected only by three explanatory variables which are tangibility, profitability and liquidity whereas there was little evidence to support the significant relationship between growth, size, risk and leverage ratio. Like some other studies conducted in the US, Germany, India and Singapore, this study has not found any significant relationship between size and leverage. However, some international evidences and studies in Malaysia confirm the positive and significant relationship between size and debt ratio. There was no relationship found between GDP rate as the macro-economic variable and capital structure. Thus, it can be concluded that the manufacturing capital structure is not affected by GDP rate.

Like other researches, this study is subjected to some limitation. Firstly, the R^2 of 0.324 indicates that only 32.4% of leverage can be explained by the variables chosen while previous studies in Malaysia have recorded the stronger relation between capital structure and its determinants. It can be justified that the weak relation can be due to industry effects or period effects; however there is no concrete evidence to prove it. Therefore, in order to eliminate ambiguity, it is recommended to examine the effect of determinants of capital structure on different industries. Secondly, another shortcoming of this study is that the data used in this analysis is based on average of years. In line with the finding and conclusion of this study, what left to be done is to analysis and use quantitative data year to year in order to observe any change in the results. As discussed previously, it should not be ignored that the importance of characteristics of capital structure is not the same in different countries. In addition, Every country has its own regulatory system, legal code, ownership structure which can affect the capital structure in different ways, therefore it is suggested that future study employ other important proxies (such as, non-debt tax shield, dividend pay-out and operating leverage) in their study to examine the importance of the determinants of capital structure in leverage.

References

- [1] Abu Sayeed Mohammad, 2011, The Determinants of Capital Structure For Selected Bangladeshi Listed Companies, International Review of Business Research Papers, Vol. 7, pp. 21-36.
- [2] Affandi Salwani, Wan Mahmood Wan Mansor and Atiqah Rashidah Abu Samah, 2007, A Study on the Determinants of Capital Structure in Property Companies: Malaysian Evidence, Proceeding of the 1st Terengganu International Business and Economic Conference, Malaysia.
- [3] Akhtar, 2005, The Determinants of capital Structure for Australian Multinational and Domestic Corporations, Australian Journal of Management, Vol.30, No.2, 321-341.
- [4] Assan Sloan., and Morrissey, 1998, Capital Structure, Ownership and Capital Payment Policy: The Case of Hospitals. The Journal of Finance, Vol.43, No.21, 37-47.
- [5] Baharuddin N, Khamis Z, Wan .Mahmood., and Dollah .H,2011,.Determinants of Capital Structure for Listed Construction Companies in Malaysia,Journal of Applied Finance & Banking, Vol.1, No.2,pp.115-132
- [6] Bradley, M., A. Jarrell and E. Kim, 1984, 'On the Existence of an Optimal Capital Structure: Theory and Evidence', Journal of Finance, Vol. 39, 857-880.
- [7] Bennett, M. and R. Donnelly, 1993, The Determinants Of Capital Structure: *Some UK Evidence*, The British Accounting Review. 25(1), 43-59.
- [8] Berger and Udell, 1998, The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle. Journal of Banking and Finance, Vol.22, No.61.
- [9] Booth L, Aivazian V, Demircug-Kunt A, Maksimovic, 2001, Capital structures in developing countries, Journal of Finance, 56(1), 87 – 130.
- [10] Caglayan and Şak E, 2010, The Determinants of Capital Structure: Evidence from the Turkish Banks, Journal of Money, Investment and Banking, No.15.
- [11] Cassar, G. and S. Holmes, 2003, Capital structure and financing of SMEs: Australian evidence. Accounting & Finance, 43(2), 123-147.
- [12] Cynthia, 2004, The impact of business groups on bankruptcy prediction modelling, DTEW Research Report 0437, 2004, 1-26.
- [13] Deesomsak.R, Paudyal.K, and Pescetto. G, 2004, *The Determinants of Capital Structure: Evidence from the Asia Pacific region*, Journal of Multinational Finance Management, Vol.14.
- [14] Deloof, M. and I. Verschueren, 1998, The Determinants of the Capital Structure of Belgian Firms, Tijdschrift voor Economie en Management (June), 165-188.

- [15] El-Sayed Ebaid Ibrahim, 2009, The Impact of Capital-Structure Choice on Firm Performance: Empirical Evidence from Egypt, *The Journal of Risk Finance*, Vol. 10 No. 5, pp. 477-487.
- [16] Hovakimian and Tehranian, 2004, Determinants of target capital structure: The case of dual debt and equity issues. *Journal of Financial Economics*, 71(3), 517-540.
- [17] Huang, G. and F.M. Song, 2006, The determinants of capital structure: Evidence from China. *China Economic Review*, 17(1), 14-36.
- [18] Hulle and Schoubben, 2004, The Determinants of Leverage; Differences between Quoted and Non Quoted Firms, *Tijdschriftvoor Economie en Management*, Vol. XLIX, No.4.
- [19] Jensen M.C., and Meckling W.H, 1976, Theory of the Firm: Managerial Behavior, Agency costs and Ownership Structure, *Journal of Financial Economics*, 3,305–360.
- [20] Jensen, M.C., 1986, Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review*, 323-329.
- [21] Mazhar A., and Nasr .M, 2010, Determinants of Capital Structure Decisions Case of Pakistani Government Owned and Private Firms, *International Review of Business Research Papers*, Vol.6, pp.40–46.
- [22] Mazur, 2007, The Determinants of Capital Structure Choice: Evidence from Polish Companies, *International Advanced in Economic Research*, Vol.13.No.4, pp.495-514.
- [23] Mira, 2005, How SME Uniqueness Affects capital Structure: Evidence from a 1994-1998 Spanish data panel. *Small Business Economics*, Vol.25, pp. 447-457.
- [24] Mishra and Chandra, 2011, Determinants of Capital Structure – A Study of Manufacturing Sector PSUs in India, *International Conference on Financial Management and Economics*, Vol.11.
- [25] Modigliani, F. and H.M. Merton, 1963, Corporate Income Taxes and the Cost of Capital: A Correction. *The American Economic Review*, 433-443.
- [26] Pandey I.M, 2007, Capital Structure, Profitability and Market Structure: Evidence Malaysia, *Asia Pacific journal of Economics& Business*, Vol.8 No.2.
- [27] Petersen, M.A. and R.G. Rajan, 1994, The Benefits of Lending Relationships: Evidence from Small Business Data. *The Journal of Finance*, 49(1), 3-37.
- [28] Pratomo.Wahyu Ario., and Ghafar.Abdul , 2007, Islamic. Bank Performance and Capital Structure. *The Global Journal of Finance and Economic*, Vol.4, No.2, pp139-145.
- [29] Rajan R., and Zingales L, 1995, What Do We Know about Capital Structure? Some Evidence from International Data, *Journal of Finance*, Vol.50, pp.1421-1460.
- [30] Shubiri F.AL, 2010, Determinants of Capital Structure Choice: A Case Study of Jordanian Industrial Companies, *Najah Univ. J. of Res. (Humanities)*, Vol. 24, No.8.
- [31] Suhaila, Kila Mat., and Wan Mansor Wan Mahmood, 2008, Capital Structure and Firm Characteristics: Some Evidence from Malaysian Companies”, <http://mpra.ub.uni-muenchen.de/14616>.
- [32] Titman. and Wessels, 1988, The Determinants of Capital Structure Choice. *Journal of Finance*, Vol.43, No.1.
- [33] Titman, Twite, and Fan, An International Comparison of Capital Structure and Debt Maturity Choices. *National Bureau of Economic*,.
- [34] Hassan.Shehu, 2011, Determinants of Capital Structure in the Nigerian Listed Insurance Firms, *International Conference on Management*.
- [35] Wedig, G., Sloan, F.A., Hassan, M. and Morrissey, M.A. 1998, “Capital structure, ownership, and capital payment policy: the case of hospitals”, *The Journal of Finance*, Vol. 43 No. 1, 21-40.
- [36] Wiwattanakantang, 1999, An Empirical Study on the Determinants of Capital Structure of Thai Firm. *Pacific-Basin Finance*, Vol.7.No.3.