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Procedia - Social and Behavioral Sciences 65 (2012) 156 – 166

Procedia
Social and Behavioral Sciences

International Congress on Interdisciplinary Business and Social Science 2012

(ICIBSoS 2012)

Capital Structure and Firm Performance: Evidence from Malaysian Listed Companies

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Abstract

The paper investigates the relationship between capital structure and firm performance. The investigation has been performed using panel data procedure for a sample of 237 Malaysian listed companies on the Bursa Malaysia Stock exchange during 1995-2011. The study uses four performance measures (including return on equity, return on asset, Tobin's Q and earning per share) as dependent variable. The five capital structure measure (including long term debt, short term debt, total debt ratios and growth) as independent variable. Size is a control variable.
The data are divided into six sectors which are construction, consumer product, industrial product, plantation, property, trading and service. The results indicate that firm performance, which is measured by return on asset (ROA) , return on Equity(ROE) and earning per share (EPS) have negative relationship with short term debt (STD) ,long term debt (LTD),total debt (TD), as independent variable. Moreover, there is positive relationship between the growth and performance for all the sectors. Tobin's Q reports that there are significantly positive relationship between short term debt (STD) and long term debt (LTD). It also reports that total debt (TD) has significant negative relationship with the performance of the firm which similar to the above analysis.

Selection and peer-review under responsibility of JIBES University, Jakarta

Keywords: Capital, Company Performance, Long term debt, Return on Equity

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1877-0428
Selection and peer-review under responsibility of JIBES University, Jakarta
doi:10.1016/j.sbspro.2012.11.105

1. Introduction

The financial decision set by management is very important in determining the optimal capital structure. The management of the firm itself has to set their capital structure in a way to maximize their firm value and this decision is really important. However, firms have a different level of leverage and managers try to achieve the best set to attain an optimal capital structure.

Modigliani and Miller (1958) suggest that in perfect capital market, strategies do not affect the value of the firm, but later they argue that firm value can be increased by changing the capital structure because of tax advantage of debt. MM (1958) argue that under very restrictive assumptions of perfect capital markets, investors homogenous expectations, tax free economy and no transaction costs, capital structure is irrelevant in determining firm value. Investors like to buy undervalued shares and sell shares of overvalued share to obtain an income. As investors exploit these arbitrage opportunities the price of the overvalued price will fall and the undervalued shares will rise, until both prices are equal.

However these assumptions do not hold in the real world. Literature suggests that there is an optimal capital structure, but there is no specific methodology to ensure them to achieve an optimal debt level. However financial theory does provide some help in understanding how the chosen financing mix affects the firm's value.

This study aims to examine empirically the relation between financing choices: including short term debt(STD), long term debt (LTD) and total debt ratio (TD) ratios; and firm performance; such as return on assets(ROA), return on equity (ROE) and Tobin's Q over the period 1995-2011 in the Malaysian listed companies using a pooling panel data procedure. Our results indicate that capital structure is significantly and positive associated with firm performance which is measured by Tobin's Q, while report a negative relationship between capital structure and ROA. Moreover, there is no significant relationship between capital structure and ROE. Altogether, our study provides evidence which indicates firm performance is positively or even negatively related to capital structure.

The paper is organized as follow. In the next session, we review some of the theoretical and empirical evidence concerning the capital structure, the following section describes the method of the research, and last session indicates empirical results of the empirical analysis and a discussion of the conclusions that can be derived from the results.

1.1 LITERATURE REVIEW

Firm's performance is significantly affected by various factors and capital structure is one of the significant factors among them. Lot of empirical studies has been done to explore if there is any (Positive, negative or no relation) relation between firm's performance and capital structure and these studies produced mixed results.

Pathak (2011) in his study found that the level of debt has significant negative association with firm performance which is not in accordance with the findings of many studies done for western economies but consistent with some of the studies done for Asian countries. One important reason of this conflicting result can be the high cost of borrowing in developing countries like India in comparison to western countries. Khan (2012) research results were consistent with the Jensen and Meckling (1975) agency cost model and didn't found any significant impact of efficiency on leverage. There is evidence towards nonlinearities in the relationship between ownership type with capital structure and firms performance.

Roden and Lewellen (1995) examines the capital structure of 48 US firms during the period 1981-1990 and revealed a positive relation between profitability and capital structure. Similar results were documented by Champion (1999) and Gosh et al. (2000). Hadlock and James (2002) suggest corporations with high level of profitability use high level of debts. Abor (2005) reports a positive relation between capital structure, which measured by STD and TD, and performance over the period 1998-2002 in the Ghanian firms. Arbiyan and Safari (2009) investigate the effects of capital structure on profitability using 100 Iranian listed firms from 2001 to 2007. The found short-term and total debts are positively related to profitability (ROE) which indicate a negative relation between long-term debts and ROE. Kester (1986) found a negative relation between capital structure and performance

(profitability) in the US and Japan. Similar results were reported by Friend and Lang (1988), Titman and Wessels (1988) from the US firms, Rajan and Zingales (1995) in the G-7 countries, Wald (1999) in the developed countries. In addition, Wiwattanakantang (1999) reported a negative relation between book and market leverage and ROA from 270 Thai firms. Haung and song (2006), too found a negative correlation between leverage and performance (earning before interest and tax to total assets is China firms). Chakraborty (2010) employed two performance measures, including ration of profit before interest, tax and depreciation to total assets and ratio of cash flows to total assets and two leverage measures, including ration of total borrowing to assets and ratio of liability and equity, and reported a negative relation between these ones. Ebaid (2009) investigates the impact of capital structure choice on performance of 64 firms from 1997-2005 in the Egyptian capital market. He employs three accounting –based measures including ROA, ROE and gross profit margin, and concludes capital structure choices, generally, has a weak –to- no impact on firm performance.

San and Heng (2011) in their research focused on construction companies which are listed in Main Board of Bursa Malaysia from 2005-2008, the result shows that there is a relationship between capital structure and corporate performance and there is also evidence that shows that no relationship between the variables have been investigated. For big companies, ROC with DEMV and EPS with LDC have positive relationship whereas EPS with DC is negatively related. A study by Saedi and Mahmoodi (2011) examines the relationship between capital structure and firm performance the study used sample of 320 firms listed on Tehran Stock exchange over the period 2002- 2009. Expect all of the financial companies and banks, the study uses four performance measures (including ROA, ROE, EPS and Tobin's Q) as dependent variable and three capital structures (including long- term debt short –term debt and total debt ration) as independent variable. The study indicated that firm performances, which is measured by EPS and Tobin's Q, is significantly and positively associated with capital structure, while reported a negative relation between capital structure and ROA, and no significant relationship between ROE and Capital structure. Pratheepkanth (2011) analyzed the capital structure and its impact on financial performance capacity during 2005 to 2009 of Business companies in Sri Lanka. The results shown the relationship between the capital structure and financial performance is negative.

Razak and Aliahmed (2008) examines the impact of an alternative ownership control structure of corporate governance on firm performance among government linked companied (GLCs) and Non –GLC in Malaysia, The study was based on a sample of 210 firms over period from 1995 to 2005. Findings appear that there is a significant impact of government ownership on company performance after controlling for company specific characteristics such as company size, non- duality, leverage and growth. The finding is off significant for investors and policy marketers which will serve as a guide for better investment decision. A study by Zertun and Tian (2007) investigated the effect which capital structure has had on corporate performance using a panel data sample representing of 167 Jordanian companies during 1989- 2003. The study showed that a firm's capital structure had significantly negative impact on the firm's performance measures, in both the accounting and market's measures.

Hovakimian and Tehranian (2004) concluded that the importance of stock returns in studies of corporate financing choices is unrelated to target leverage and is likely to be due to the correlation between Pecking order theory and Market timing behavior theory. This study also found that profitability has no effect on target leverage. Unprofitable firms issue equity to offset the excess leverage due to accumulated losses. Thus, this study supports the notion that firms have a target capital structure. However, preference for internal financing and the temptation to time the market by selling new equity, when the share price is relatively high, interfere with the tendency to maintain the firm's debt ratio close to its target.

Research method: Sample and data

Our sample consists of 237 Malaysian companies listed on the Bursa Malaysia main board belonging to six sectors (construction, plantation, consumer product, property, property and transportation). Listed firms were then screened

against several factors; financial services institutions (bank and insurance firms) were deleted from the sample. These firms are observed over 1995-2011 periods, allowing us to form a cylinder of panel data of 3730 observations. All data obtained by consulting "DATA STREAM" database.

The dependent variables in the study are return on equity (ROE), return of asset (ROA), Tobin Q and earning per share (EPS). The return on equity is calculated as net profit item from the balance sheet dividing with total equity item from also the balance sheet for each of the 237 companies and for each of the years from 1995 to 2011. Return on asset (ROA) is calculated as net profit item dividing by total asset and both of the items are taken from balance sheet. Tobin Q is calculated as book value of total debts and market value of equity divided by book value of total asset and EPS is calculated as net income divided by a number of shares outstanding.

The independent variables in this analysis are short term debt (STD): ratio of short-term debt over total asset, long term debt (LTD); the ratio of long term debt divided by long term debt plus equity, total debt(TD) is the ratio of total asset minus total equity divided by total asset. Growth is calculated as percentage of total asset.

Variable measurement: Performance

Literature uses a number of different measures of firm's performance, these measure include accounting based measurement calculated from firm's financial statements such as ROA and ROE (eg. Majumdar and Chhibber, 1999; Abor, 2005, Saedi and Mahmoodi, 2009; Ebaid, 2009).

Tobin's Q measures which mixed market values with accounting values (Zetun and Tian, 2007). This study uses two of common accounting based performance measures to evaluate the firm's performance , ROE which computed as the ratio of net profit to total equity and ROA which computed as the ratio of net profit to total assets.

Financial leverage

Similar to previous literature (Abor, 2005, Abor, 2007, Saedi,2009, Ebaid, 2009) financial leverage was measured in the study by three ratios of short term debt to total assets (STD), the ratio of long term debt to total asset (LTD) and total debt to total asset (TD).

Control variable

Ramaswammy, 2001; Frank and Goyal, 2003; Jermias, 2008, Ebaid, 2009, suggest that the firm's size may influence its performance; larger firm may have more capacity and capabilities. Therefore this study controls the differences in firm's operating environment by including the size variable in the model. Size is measured by the log of total assets of the firm and included in the model to control for effects of firm size on dependent variable.

Model

The relationship between leverage and a firm's performance was tested by the following regression models:

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$$ROE_{I,t}\ (performance) = \beta_0 + \beta_1 LTD_{I,t} + \beta_2 Size_{I,t} + \beta_3 Growth + \beta_4 TD + \beta_5 STD + \varepsilon_{I,t} \quad (1)$$

$$ROA_{I,t}\ (performance) = \beta_0 + \beta_1 LTD_{I,t} + \beta_2 Size_{I,t} + \beta_3 Growth + \beta_4 TD + \beta_5 STD + \varepsilon_{I,t} \quad (2)$$

$$Tobin\ Q_{I,t}\ (performance) = \beta_0 + \beta_1 STD_{I,t} + \beta_2 Size_{I,t} + \beta_3 Growth + \beta_4 TD + \beta_5 STD + \varepsilon_{I,t} \quad (3)$$

$$EPS_{I,t}\ (performance) = \beta_0 + \beta_1 TD_{I,t} + \beta_2 Size_{I,t} + \beta_3 Growth + \beta_4 LTD + \beta_5 STD + \varepsilon_{I,t} \quad (4)$$

Where:

$STD_{I,t}$ = short term debt to total assets for firm I in year t
$LTD_{I,t}$ = long term debt to total assets for firm I in year t
$TD_{I,t}$ = total debt to total asset for firm I in year t
$Size_{I,t}$ = logarithm of total assets for firm I in year t
$Growth_{I,t}$ = changes in total asset
$\varepsilon_{I,t}$ = the error term

Analysis and results: Descriptive statistic

As discussed earlier, there are four dependent variables which are ROE, ROA, Tobin Q and EPS whereas TD, STD, LTD and growth represent as independent variables. The breakdown of 237 samples is presented in Table 1. The sample is divided into 6 sectors which are listed on the Bursa Malaysia. There are construction, consumer product, industrial product, plantation, property and trading. In term of number, there are three sectors represent more than 15% which are consumer product, plantation and trading. The other three sectors represent less than 15% which are construction (12.65%), property (14.35) and industrial product (14.35%).

Table II presents a summary of descriptive statistics of the dependent and independent variables used in the study. Descriptive statistics show mean, median, minimum, maximum, standard deviation, skewness and kurtosis. First the mean (median) of ROA, ROE, EPS and Tobin Q are 0.034562 (0.03394), 0.03 (0.0685), -0.69131 (0.057) and 0.7812 (0.8067) respectively. The mean capital structure's (TD, LTD and STD) are about 44, 14.213 and 14.201, which indicates Malaysian companies finance their asset by an average using the long term debt and short term debt. From this result, it shows that Malaysian companies use only 14% debt to finance their assets. This confirms that they are in less riskier condition and something needs to be done to encourage company to enhance their business by getting more debt to have an increase their value. The data itself is taken from 1995 to 2012 comprise of 237 companies listed on the Bursa Malaysia, but the age of the companies are different.

Table 1: Number of companies by Industry Sector

No	Industry Sector	Number of companies	Percentage
1	Construction	40	12.65%
2	Consumer Product	30	18.56%
3	Industrial Product	40	14.35%
4	Plantation	40	16.87%
5	Property	30	14.34%
6	Trading and services	57	23.20%
	Total	237	100%

Table II: Descriptive analysis

	ROA	ROE	Tobin Q	EPS	TD	LTD	STD	Growth	Size
Mean	0.034561	0.030029	0.78127	-0.69131	0.44183	0.14213	0.14201	0.09642	12.459
Median	0.03394	0.068548	0.8067	0.057	0.42898	0.05293	0.095318	0.058187	12.246
Minimum	-2.7683	-24.977	-86.228	-726.07	-21.112	-11.083	-27.987	-35.972	4.5643
Maximum	5.9688	17.018	25.545	145.22	54.635	33.934	8.2742	5.6034	18.452
Standard Deviation	0.21585	0.76518	2.2559	22.349	1.5657	0.78926	0.72243	0.89534	1.3184
Skewness	7.689	-11.73	-22.958	-28.318	14.108	32.106	-24.906	-29.327	0.47
Kurtosis	272.4	609.45	986.72	843.83	665.94	1470.8	1011.6	1154.6	1.4815
No of cases	2334	2334	2334	2334	2334	2334	2334	2334	2334

Regression results

We divided the analysis into six sub sectors which are consumer product, construction, property, plantation, industrial product and trading services. Table I shows the results of testing the relationship between return on asset and capital structure (TD, LTD, STD, growth and size).

For a plantation sector, growth and size have a positive relationship to the performance of the companies which measured by ROA whereas, STD and LTD have a negative significantly influenced the performance of the company. For consumer product sector, only the total debt has significant negative relationship to firm performance. The main reason of having the negative relationship is because the company is confronting with the default risk of having higher loan. Total debt and short term debt also have a significant negative relationship in a property sector. In this analysis, all sectors shows growth has significantly positive relationship with the performance measured by ROA. The value of adjusted R squared is slightly very low, this explains than the independent variables can't really explain the dependent variable.

Table I: Performance measured by ROA

IV		CP	Const	PR	PL	T&S	IP
TD	P-value	0.00001***	0.00014***	0.001***	0.46142	0.40636	0.00001***
	T-stat	*-18.87*	*-3.847*	*-0.9447*	*0.7376*	*0.832*	*-11.9389*
LTD	P-value	0.46364	0.64748	0.85914	0.00497***	0.01639**	0.41862
	T-stat	*-0.733*	*0.458*	*-0.1448*	*-2.8324*	*-2.416*	*-0.8092*
Growth	P-value	0.00001	0.00001***	0.00136***	0.00001***	0.03853**	0.00778***
	T-stat	*7.186*	*4.824*	*2.624*	*13.1705*	*2.08*	*2.6675*
STD	P-value	0.00001***	0.54321	0.00084**	0.00001***	0.19423	0.04838
	T-stat	*-5.319*	*-0.609*	*-2.2973*	*-3.9948*	*-1.302*	*-1.9767*
Size	P-value	0.37714	0.01134**	0.00117	0.00175***	0.06252	0.02612
	T-stat	*-0.883*	*2.546*	*0.7173*	*3.161*	*-1.871*	*-2.2281*
Adj.R2		0.16241	0.1918	0.13229	0.649073	0.046813	0.16807

Table II: Performance measured by ROE

IV		CP	Const	PR	PL	T&S	IP
TD	P-value	0.24233	0.17891	0.00351***	0.00956***	0.31216	0.32954
	T-stat	*-1.1695*	*1.347*	*-2.9797*	*2.6101*	*1.013*	*-0.9756*
LTD	P-value	0.83177	0.10623	0.39832	0.00003	0.0008***	0.42584
	T-stat	*-0.2125*	*-1.62*	*-0.8477*	*-4.2811*	*-3.394*	*0.7967*
Growth	P-value	0.01249**	0.00001***	0.00675***	0.67174	0.03016**	0.17961
	T-stat	*2.5*	*4.506*	*2.758*	*0.4242*	*2.18*	*1.343*
STD	P-value	0.05635	0.10698	0.53001	0.01068**	0.16985	0.41518
	T-stat	*-1.9093*	*-1.616*	*-0.6299*	*-2.571*	*-1.377*	*-0.8152*
Size	P-value	0.93228	0.60065	0.01278**	0.50977	0.13795	0.14885
	T-stat	*-0.085*	*0.524*	*2.5287*	*0.6601*	*-1.488*	*1.4449*
Adj. R2		0.00504	0.0587	0.2375	0.054424	0.067	0.00605

Table II presents the result of testing the relationship between capital structure measured by ratio of TD to total assets , ratio of LTD to total assets and TD to total assets and firm 's performance measured by ROE. As shown in this table, the results indicate a significant negative relationship between TD, LTD, STD and ROE; the coefficient of STD in model 1 is negative and statistically significant at level of confidence of 99 percent, which suggests that an increase in TD, LTD, STD associated with decrease in ROE. Result indicates a significant positive relationship between growth and ROE. This suggest that than an increase in growth, it will result in an increase in ROE(performance).

Table III: Performance measured by EPS

		CP	Const	PR	PL	T&S	IP
TD	P-value	0.00001***	0.00001***	0.34683	0.25531	0.14705	0.00001***
	T-stat	*-6.4137*	*-5.78*	*-0.9447*	*1.14*	*1.455*	*-4.5798*
LTD	P-value	0.00001***	0.68367	0.88512	0.00091***	0.12686	0.00001***
	T-stat	*-9.475*	*0.408*	*-0.1448*	*-3.3548*	*-1.532*	*-6.3474*
Growth	P-value	0.08936	0.16701	0.00989***	0.00001***	0.00053***	0.22896
	T-stat	*1.6996*	*1.385*	*2.624*	*6.4248*	*3.515*	*1.2039*
STD	P-value	0.00176***	0.81862	0.02344**	0.00005***	0.03767**	0.00925***
	T-stat	*-3.1328*	*0.23*	*-2.2973*	*-4.1104*	*-2.09*	*-2.6085*
Size	P-value	0.05595*	0.45316	0.47467	0.03571**	0.14705	0.35043
	T-stat	*1.9125*	*0.751*	*0.7173*	*2.1107*	*1.455*	*0.9343*
Adj. R2		0.06411	0.23793	0.13229	0.444592	0.105444	0.070514

Table III presents the result of testing the relationship between capital structure measured by TD, LTD, STD, Growth and firm's performance measured by EPS. As shown in table, the results indicate TD has significant negative relationship at level of confidence of 99 percent, on firm's performance for three sectors which are consumer, construction and industrial product, which suggest that increase in total debt will decrease firm performance. For plantation and trading sector, there is a positively weak relationship

between the firm performance measured by EPS and total debt. Most of the R-squared are slightly very low except for plantation. Finally, the results show that firm performance ROE has no significant relationship with control variable (firm size).

Table IV: Performance measured by Tobin Q

		CP	Const	PR	PL	T&S	IP
TD	P-value	0.00001***	0.00001***	0.00001***	0.00001***	0.00001***	0.00001***
	T-stat	*-274.208*	*-18.959*	*-29.0299*	*-39.901*	*-56.034*	*-183.2292*
LTD	P-value	0.00001***	0.00006***	0.00001***	0.00001***	0.00001***	0.00001***
	T-stat	*10.2511*	*4.057*	*-12.4055*	*19.3834*	*31.572*	*5.5172*
Growth	P-value	0.91389	0.53332	0.52021	0.37361	0.91772	0.49083
	T-stat	*-0.1081*	*0.624*	*0.6449*	*-0.8912*	*-0.103*	*-0.6893*
STD	P-value	0.00001***	0.00001***	0.00001***	0.00001***	0.00001***	0.00001***
	T-stat	*103.7561*	*13.486*	*20.5129*	*26.8637*	*49.93*	*64.3453*
Size	P-value	0.00001***	0.00728***	0.80393	0.54288	0.96778	0.16699
	T-stat	*5.106*	*2.7*	*-0.2488*	*0.6092*	*0.04*	*1.3831*
Adj. R2		0.9804	0.549354	0.88681	0.8951	0.93439	0.98456

Table IV presents the results of testing the relationship between capital structure measured by TD,LTD, STD, growth and the firm's performance measured by Tobin Q. The results indicate all independent variable except for growth have strongly statistically significant level of confidence of 99 percent. The control variable also has a strong significant effect on firm performance measured by Tobin Q for consumer product and construction sectors. Result shows that adjusted R-squared are really high above that 80 percent confirmed that all dependent variable are more than 80 percent can explain the performance of the firm explain by Tobin Q.

In this analysis, total debt has also negatively significant relationship with the performance of the firm. This indicates any increase in total debt will decrease the performance of a firm. In this case, the performance of the firm has no significantly relationship with the firm size; indicate increase in total asset has no effect on the firm performance.

Conclusions

The study investigates the impact of capital structure choice on firm performance of Malaysian listed firms and using four of accounting based measure of firm performance (ROA, ROE, EPS and Tobin Q), the empirical tests indicate that capital structure (especially TD and STD) impacts negatively measured by ROE, which is consistent with Ebaid (2009) who also documented the same results. On the other hand capital structure (LTD and TD) has negative significant impact on firm's performance measured by ROA and these findings are consistent with Rajan and Zingales (1995), Zetun and Tian (2007) and Abor (2007) who indicated that firm's performance is negatively related to capital structure. These finding are in contrast with Champion (1999), Gosh et al (2000), Hardlock and James (2002), Frank and Goyal (2003) and Berger and Bonaccora di Patti (2006) who revealed that there is a positive relation between firm performance and capital structure. Furthermore, the results show that Tobin Q has a positive and strong significant relationship with STD, LTD and TD at 1 percent level. Moreover the same relation between performance and firms Furthermore, the results show that Tobin Q has a positive and significant relationship with size (as control variable). Finally, findings of this study suggest that there is a

significantly positive relationship between Tobin's Q (firm performance) and capital structure measured by LTD and STD. This finding is consistent with Saedi, A and Mahmoodi, I who also found that there is positive relationship between Tobin's Q (firm performance) and capital structure. Their results also found that size (as control variable) has a negative effect on the Tobin's Q only for property sector, so further research could examine the joint impact of both capital structure and ownership structure on firm's performance.

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