DETERMINANTS OF CORPORATE DEBT OWNERSHIP STRUCTURE IN MALAYSIA

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ABSTRACT

This paper examines the relationship between corporate debt ownership structure and several firm characteristics in Malaysia. Three dependent variables are used in testing this relationship namely the predominant proportion of long-term bank debts, long-term non-bank debts, and long-term public debts. The multiple regression analysis is used to examine the relationship amongst the dependent variables and the firm characteristics. The results demonstrate that the mean proportion of bank debt is higher than that of non-bank debt, but lower than that of public debt. The results also suggest negative relationship between bank debts with firm characteristics such as total assets, market to book value, and age of the firms. There is no significant relationship between characteristics of the firms, and the long-term non-bank debts and public debts.

INTRODUCTION

The phrase capital structure refers to the relative mix of debt and equity securities in the long-term financial structure of a firm. Almost every major published empirical studies (Masulis, 1980; Dann, 1981; Mickelson and Partch, 1986) shows that stock prices rise when a company announces leverage-increasing events such as debt-for-equity exchange offers, and debt-financed share repurchase program. On the other hand, leverage-decreasing events such as equity-for-debt exchange offers, new stock offerings are always associated with share price declines (Dann and Mickelson, 1984; Finnerty, 1985). Higher proportions of debt in capital structure magnify the returns and growth and yet expose firms to a higher probability of financial distress.

Several theoretical models make predictions about firm's debt source preferences. Models of debt source preferences assume that the bank debt and private non-bank debt are the same. Nevertheless, there are few empirical tests that attempt to separate bank debt (Hook and Opler, 1993, Carey, *et al*, 1993). Fama (1985) reports that there is an important difference amongst sources of debts. Johnson (1997) shows that there is a difference between bank debt and private non-bank debt. Collectively, these models make predictions about the relation between debt source preferences and a wide variety of firm characteristics which include firm size, credit quality, reputation, investment opportunities, monitoring costs, asset

collateral value, project liquidation values, lender informedness, and leverage (Johnson, 1997).

This paper attempts to determine corporate debt ownership structure of Malaysian firms. The first section begins with the review of the theoretical debt choice literature. The second section describes the sample and methodology of the study. Results are presented in the fourth section, followed by conclusions presented in fifth section.

LITERATURE REVIEW

A firm's debt ownership structure to some extent is determined by its demand for different debt sources and the supply of debt by different lenders. Debtors are concerned with costs and benefits derived from each debt source. Similarly, suppliers of debts weigh firms accordingly and give credits. Abundant theoretical models develop around this demand and supply preferences based on various concerns. Johnson (1997) classifies these models into three main concerns: the costs of monitoring and information costs; the likelihood and costs of inefficient liquidation; and the borrowers' incentives.

Models Based on Monitoring and Collecting Information on Borrowers.

Fama (1985) argues that public debts are issued predominantly by large firms. This may involve high information and contracting costs that make it uneconomical for small firms to finance their investments by public debts. Thus, small firms prefer bank loans that require lower information cost because they need to report to fewer lenders than public debt. Moreover, a bank loan is a low-priority claim and the lender has access to inside information and this reduces the costs by signaling other higher priority claimants that they do not need to monitor at their own costs. Nakamura (1993) argues that small firms have lower costs of producing and monitoring costs by borrowing from banks that can collect comprehensive information from their transaction accounts. Large firms, however, typically have transaction accounts in greater number of banks and provide less useful information.

Yosha (1995) argues that firms which use public debt requires high disclosure costs, thus there might be some risks of revealing sensitive information to competitors. Whereas, using private debts could avoid high disclosure costs. Thus, Yosha predicts firms with high quality projects avoid public debt because for them it has two costs: the cost of information disclosure and the cost of rival responses when competitors learn the firm has high quality projects. Firms with low quality projects might choose public debts, and in so doing, these firms incur the high cost of disclosure, but avoid competitive responses for revealing the true quality of their projects.

Models Based on the Likelihood and Costs of Inefficient Liquidation.

Berlin and Loeys (1988) examines two contractual alternatives available to a firm seeking to finance an investment: debt contracts with covenants based on indicators of the firm's financial conditions, and debt contracts enforced by a monitoring agent (a banker). The firm's optimal choice reflects a tradeoff between the inefficiencies of harsh bond covenants and the agency costs associated with hiring a delegated monitor. Their model produces several predictions. First, since the indicators used to decide liquidation and rigid or lenient covenants are based on financial conditions (e.g., financial ratios), firms with imprecise indicators prefer bank debts that can be renegotiated when the indicator is wrong. Second, increased credit ratings may decrease the value of early liquidation resulted from bank monitoring, thus decrease the likelihood of choosing bank debt. Third, early liquidation occasioned by rigid covenants or monitoring is less valuable for firms whose projects have low liquidation value, thus these firms prefer public debts. Chemmanur and Fulghieri (1994) argue that bank loans are preferred because it can be renegotiated for firms with good credit standings to avoid inefficient liquidation when necessary. Similarly, firms with higher financial distress value negotiability, thus they prefer bank debt even if it costs more. In contrast, firms with low likelihood of financial distress prefer public debt, thus they value negotiability less.

Models Based on the Borrowers' Incentives

Diamond (1991) finds that borrowers with credit ratings toward the middle of the spectrum rely on bank loans. Borrowers with higher credit ratings have a lower cost of capital, thus reputation is established and they do not need monitoring. These high reputation firms use public debt because their credit reputation gives them sufficient incentives to avoid risky behavior without being monitored. Very low rated borrowers have less to lose reputation wise if they engage in actions harmful to lenders, bank monitoring will not provide incentives for these firms instead monitoring will screen out borrowers whose actions threaten the interest of banks. Rajan (1992) argues that bank can monitor the firm and control its investment decisions but it also can distort the firm's incentives. Banks can distort incentives by altering division of surplus for continued short term financing of profitable projects. The borrower may then prefer credit from other sources. Firms with low quality project are more likely to borrow from banks and bank control may be considered valuable to these firms. Hoshi, *et al*, (1993), monitoring by banks discourage unprofitable investments. Firms with good quality projects do not need bank monitoring and prefer public debt. Firms with unattractive investments may require bank monitoring to invest efficiently. These predictions rely on the assumption that firms are "somewhat" concerned about shareholder wealth.

In summary, the theoretical models predict that public debt preferences is positively related to firm size, reputation, monitoring costs, investment opportunities, project

quality, project liquidation value, and asset collateral value, and negatively related to credit risk, the precision of financial indicators, and leverage.

METHODOLOGY

Data Description

The study aims at looking how firms choose to source its debt financing. The analysis focuses on the proportions of long-term debt bank debt, long-term private non-bank debt, and long-term public debt in a firm's capital structure. Sample of firms is chosen based on these criteria;

i) Firms are listed on the Kuala Lumpur Stock Exchange (KLSE) Main Board from 1992 onwards.

ii) Firms use long-term debt as one of their sources of financing, and the amount of debts are stated in their balance sheets starting from 1992 to 1997.

A sample size of 119 firms including 64 firms which have predominantly used bank debt, 47 firms which have predominantly used private non-bank debt, and 8 firms which have predominantly used public debts were selected. Firms' data namely age, size (total assets), fixed asset ratio, total long-term debt, market-to-book value ratio, leverage, and earnings growth volatility (EBITD), are obtained from the *Handbook of the KLSE* from 1993 to 1998.

Methodology

To examine the relationship between corporate debt ownership structure and firms characteristics, multiple regression analysis is used. The dependent variables are proportions of debt held by banks, proportions of debt held by private non-bank, and proportions of debt held public. The proxies for firms characteristics used in this study are as follows;

As Diamond (1991) suggests, age is defined as the number of years since first incorporation of a firm as a proxy for reputation. Fama (1985) argues monitoring would decrease and lender informedness increase with firm size. Book value of total assets is used to measure firm size and becomes the proxy for monitoring costs and lender informedness. Carey, *et al,* (1993) distinguishes between observable and unobservable credit risks. As a proxy for observable credit risk and the likelihood of financial distress, the earnings growth volatility is used. The volatility of earnings growth is defined as the standard deviation of the first differences in earnings before interest, taxes, and depreciation (EBITD) for the five years preceding the sample year. Investment opportunities of a firm are measured by calculating the ratio of the market value of a firm's assets to its book value. This ratio also proxies to project quality defined as the likelihood that a future project

will succeed. The market-to-book ratio is the book value of total assets minus the book value of equity plus the market value of equity, divided by the book value of total assets. Asset collateral value is proxied by the fixed asset ratio defined as net property, plant, and equipment divided by total assets. Previous capital structure studies find that leverage is related to many of the same factors that are argued important in determining firm's debt source preferences. Leverage in this study is proxied by the book value of long-term debt divided by book value of total assets.

Hypotheses

The following hypotheses are tested;

$H_{o,1}$: Proportions of debt held by banks are not related to firms' characteristics.
$H_{o,2}$: Proportions of debt held by private non-bank are not related to firms characteristics.
$H_{o,3}$: Proportions of debt held by public are not related to firms' characteristics.

The equations for above-mentioned relations are as follows;

$$Y_1 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b6X6$$
$$Y_2 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b6X6$$
$$Y_3 = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b6X6$$

Where,

Y_1 = proportions of debt held by banks
Y_2 = proportions of debt held by private non-banks
Y_3 = proportions of debt held by public
X_1 = age of the firms
X_2 = total assets
X_3 = market-to-book-value ratio
X_4 = fixed asset ratio
X_5 = leverage
X_6 = earnings growth volatility

One of the assumptions of the multiple regression models is that there is no exact linear relationship between any of the independent variables in the model. Thus, no multicollinearity exists.

FINDINGS

Table 1 shows the full sample and subsamples according to debt ownership structure. From the full sample of 119 firms, 64 (54%) are predominated by bank debts, 47 (39%) by non-bank debts, and 8 (7%) by public debts. In the subsamples

based on sources of debt used, 82 firms have bank debt outstanding, 99 firms used non-bank debts, and 11 firms have some public debts. For the full sample, the mean proportions of bank debt and non-bank debts are 0.51 and 0.44 respectively. The mean proportion of debt held by public is 0.05. For the firms that use bank debts (82 firms), the mean proportion for this subsample is 0.74; mean proportions of 0.2 for non-bank debts and 0.06 for public debts. There are 108 firms found to have no public debts outstanding with mean proportions of debt held by banks is 0.52 and 0.48 by non-bank lenders. Thus whether the full sample of the subsample analysis, the mean proportions of bank debt is larger than the other two sources of borrowings.

Table 1: Summary statistics for cross-sectional debt ownership structure.

Ownership proportions	Proportion of debts held by banks	Proportion of debts held by private non-banks	Proportion of debts held by public
Full sample (n=119)			
Mean	0.5126	0.4380	0.0500
Median [a]	0.5950	0.2600	0.0000
Firms with bank debts (n=82)			
Mean	0.7367	0.2038	0.0665
Median [a]	0.8500	0.0800	0.0000
Firms with public debt (n=11)			
Mean	0.3509	0.0320	0.5120
Median [a]	0.3000	0.1200	0.2800
Firms with no public debts (n=108)			
Mean	0.5194	0.4806	0.0000
Median [a]	0.6750	0.3350	0.0000

Median [a] = 0 reflects the fact that more than half the firms have no debts from that source.

Table 2 presents the summary statistics for the firms' characteristics. The firms are classified into three groups based on the debt source firms mostly use. Firms that use predominantly bank debts have an average of 29.37 years compared to 30.0 for firms that used predominantly non-bank, and 29.0 years for firms that use predominantly public debt. In terms of age characteristics, the three classes show little difference. Firms that use mostly bank debts have a mean size (total assets) of RM1986 million, which compares to RM2005 million for firms using predominantly non-bank debts, and RM1080 million for firms using predominantly public debts. The pattern is also similar for long-term debt characteristics across the three classes. Firms that use predominantly bank debts have a mean long-term

debt relatively higher than firms use predominantly non-bank and public debts, with mean of RM322 million, RM299 million and RM278 million respectively. The mean of market value to book value of assets for firms which use primarily public debt is almost twice the mean for firms which use primarily non-bank and bank debts. The mean of fixed asset ratio is 0.4 for firms with predominant public debt that is relatively higher than those of bank debt and private non-bank debt with the means of 0.34 and 0.35 respectively. Mean leverage is 0.26 for firms using mostly public debt, 0.14 for firms using bank debt, and 0.08 for firms using non-bank debt. There is no significant difference of the means for the three groups of debt sources for which 0.04 for bank debt and 0.05 for both non-bank debt and public debt.

Table 2: Summary statistics for firm characteristics

Sample	Firms with predominantly bank debt	Firms with predominantly non-bank debt	Firms with predominantly public debt
Age (years)			
Mean	29.27	29.91	28.63
Median	28.00	27.00	29.50
Total asset (RM million)			
Mean	1986	2005	1080
Median	637	590	1034
Long-term debt (RM million)			
Mean	299	322	278
Median	100	190	240
Market-to-Book Ratio			
Mean	2.88	2.73	4.77
Median	2.55	2.43	2.16
Fixed asset ratio			
Mean	0.34	0.35	0.40
Median	0.36	0.35	0.33
Leverage			
Mean	0.14	0.08	0.26
Median	0.12	0.04	0.23
Earnings growth volatility			
Mean	0.04	0.05	0.05
Median	0.03	0.04	0.05

Johnson (1997) found on average the age of firms were 40.8 years, 47.47 years and 53.7 years for firms predominantly used bank debt, non-bank debts and public debt respectively which is above 40 years old. The average age of the sample firms in this study however is below 30 years old. The total asset was highest for firms

primarily used public debt in Johnson's (1997). This study however finds that firms with most public debt outstanding have the lowest total assets amongst the three groups. With respect to the ratio of market value to book value of assets, Johnson (1997) found that the mean proportions relatively smaller for firms primarily used bank debts, private non-bank debt and public debts which were 1.38, 1.54 and 1.44 respectively compared to the findings of this study which are 2.88, 2.73, and 4.77 respectively for the three groups. Firms that use predominantly public debt have a mean leverage of 0.26, compares to 0.14 for firms that use predominantly bank debts, and 0.08 for firms that use predominantly non-bank debts. The results are similar to Johnson's (1997) except the leverage means were slightly higher for firms with primarily bank debt and firms with primarily non-bank, which were 0.28 and 0.18 respectively. Mean earnings growth volatility is 0.04 for firms using mostly bank debt and 0.05 for firms using mostly non-bank debt and public debt.

Empirical Determinants of Ownership Debt Structure

Table 3 shows the results of regressions relating debt ownership structure to firms' characteristics. Bank debt use as the dependent variable is negatively related to age, firm size (total assets), and market-to-book value ratio. The negative relationship between bank debt use and age is statistically significant with t-value of -1.846 and p-value of 0.07 at the 10% significant level. Similar relationship is observed between bank debt use and firm size and market-to-book value and also significant at 1% level with t-value -3.913, and -2.724. These findings reject the null hypotheses that proportions of debt held by banks are not related to firms' characteristics. Other firm characteristics namely leverage, and earnings growth volatility shows negative but insignificant relationship with bank debt. Bank debt use however is positively but insignificantly related to fixed asset ratio.

The negative relationship between bank debt use and age implies that as age increases, firms reduce their use of bank debt. Thus as firms get older, they prefer to use more public debt, as this will increase their reputation. There is also a negative relationship between bank debt used and total assets. This is consistent with Fama's (1985) arguments that larger firms find it more economical to produce the information required for public securities, and thus borrow publicly rather than rely on bank or private debt. The firm size result is also consistent with Nakamura's (1993) arguments that bank borrowing is less beneficial for larger firms because their transaction accounts are typically spread over a greater number of banks than small firms accounts, thus provide less useful information.

Table 3: Regression analysis of debt ownership proportions on firm characteristics.

Firm characteristics	Proportion of debt held by banks	Proportion of debt held by non-bank	Proportion of debt held by public
Intercept	18.627*	16.004*	5.238
	(0.000)	(0.000)	(0.200)
Age	-1.846**	0.521	-1.588
	(0.070)	(0.605)	(0.358)
Total assets	-3.913*	-0.624	0.146
	(0.000)	(0.536)	(0.908)
Market-to-book ratio	1.050	0.347	1.311
	(0.298)	(0.731)	(0.415)
Fixed asset ratio	-2.724*	-0.919	1.843
	(0.009)	(0.364)	(0.317)
Leverage	-1.344	0.374	2.377
	(0.185)	(0.71)	(0.254)
Earnings growth volatility	-1.206	0.641	-1.588
	(0.233)	(0.525)	(0.358)

Note: *Significant at 1% level, **Significant at 10% level, P-value in parentheses.

The negative relationship between bank debt use and size indicates that larger firms have high probability of sourcing debt from public. This may be due to less monitoring from public creditors. Carey, *et al,* (1993) argues unobservable credit risk is negatively related to age and firm size, then the negative relationship can be used as one of the indicators of credit risk. Market-to-book value used to measure investment opportunities and quality of projects. High ratio may indicate capital market gives high quality to the projects or investment being considered. This may imply low project liquidation value. There is no significant relationship between sources of debt and the fixed asset ratio. This may imply that additional value or collateral asset does not depend on the project liquidation value. This is also similar to leverage and earnings growth volatility which do not influence the choice of debt.

The fourth column in Table 3 represents regression results where the proportions of long-term debt held by public is the dependent variable. There is no significant relationship between the variable with the firm characteristics. This is also similar to private non-bank debt that shows no significant relationship to the firm characteristics. Thus, null hypotheses 2 and 3 are accepted. This may imply that monitoring and information costs are not significantly related to the choice of private non-bank and public debts. This also shows liquidation efficiency does not determine the sources of debt either non-bank or public debt.

CONCLUSIONS

This study extends previous research of debts ownership preferences by examining the relation between debt ownership structure and firm characteristics suggested by recent theory using Malaysian data. Debt ownership structure is classified into three, namely bank debt ownership, private non-bank ownership and public debt ownership. Firm characteristics examined include firm size, credit quality, reputation, investment opportunities, project quality, monitoring costs, liquidation value, and leverage. The results suggest that 54% of the sample firms are predominantly held by bank debt, 39% are predominantly held by private non-bank and 7% are predominantly held by public debt. This indicates that firms use more bank debts than private non-bank debts and public debts. Johnson (1997) finds that 67% of the sample firms are primarily held by public debt, 24% and 9% are primarily held by bank debt and non-bank debt respectively. This implies that the important role-played by public debt in developed countries such as the United States as one of the financing sources. As for leverage, results show that long-term debt for firms with predominant non-bank debt is 8% from the total assets, compares to 14% and 26% from the total assets for firms with predominant bank debt and private non-bank debt. This indicates that long-term non-bank debt is less important while long-term bank debt is relatively important and plays crucial role in choices of debt source for Malaysian firms.

The results indicate that proportions of debt held by bank are negatively and significantly related to age, firm size, and market-to-book-value ratio. This means that as the firms get older, the reputations of the firm increases and thus prefer using public debt rather than bank debt. Thus, firms with good reputation can easily get capital from public source. Market-to-book value ratio is negatively and significantly related to bank debt can be explained in the context of project liquidation value. As the ratio increases, project liquidation value decreases implying that the project was good. Thus, quality of projects is assured. High ratio indicates that market gives high quality to projects or investment opportunities chosen by the firms. A firm with predominant bank debt is found to have a negative relation with total assets (size), and the relationship is significant statistically. This implies that big firms in terms of total assets have higher likelihood of contracting public debt resulting in lower monitoring costs. This finding is consistent with Johnson's (1997) in which he found age, firm size, and market-to-book-value ratio were negatively related to bank debt use and non-bank debt use. Bank debt use however is not related to fix asset ratio, leverage, and earnings growth volatility. Similarly, non-bank debt use and public debt use are not related to all of the firm characteristics specified.

The results are mixed somewhat due to the sample imbalance of the sample size for each category of dependent variables. Moreover, long-term non-bank debt used in this study are the debt source coming from various obligations due in twelve months or more such as installment purchase, lease financing, pension funds and

others. Overall, the findings also suggest that debt source preference is important in determining the capital structure decision of a firm.

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