Journal of Science and Technology 11(June 2013): 158-163

CAPITAL STRUCTURE DETERMINATION OF LATHER INDUSTRIES IN BANGLADESH

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Received 26 April 2012, revised 25 February 2013, accepted 25 February 2013

ABSTRACT

This research provides further evidence of the capital structure theories pertaining to lather industries in Bangladesh and to assess the influences of these determinants on the capital structure decisions. The dependent variable was leverage ratios and the independent variables were profitability, asset tangibility, growth, and firm size. The results of cross-sectional OLS regression show that there was little evidence to support the information asymmetry theory and agency cost theory. The less profitable firms are those mainly financed through external funding. The firms with a bigger proportion of tangible assets have easier access to long-term debt.

Key words: Capital structure, trade off theory, growth, firm size

INTRODUCTION

A capital structure concerns the composition of the liability of the company, or more specifically, which is the relative participation of the several financing sources in the composition of the total obligations (Brealey *et al* 2003, Gitman 1997 and Weston *et al* 2000). The capital structure term means how a company should finance the capital of that business.

Following on from the pioneering work of Modigliani and Miller (1958) on capital structure, three conflicting theories of capital structure have been developed. They are namely: static trade-off, pecking order, and agency cost theories. The static trade-off theory of capital structure (also referred to as the tax based theory) states that optimal capital structure is obtained where the net tax advantage of debt financing balances leverage related costs such as financial distress and bankruptcy, holding firm's assets and investment decisions constant (Baxter, 1967 and Altman 1984). In view of this theory, issuing equity means moving away from the optimum and should therefore be considered bad news. According to Myers (1984), firms adopting this theory could be regarded as setting a target debt-to-value ratio with a gradual attempt to achieve it. Myers (1984), however, suggests that managers will be reluctant to issue equity if they feel it is undervalued in the market. The consequence is that investors perceive equity issues to only occur if equity is either fairly priced or overpriced. As a result, investors tend to react negatively to an equity issue and managements are reluctant to issue equity.

Pecking order theory (also referred to as the information asymmetry theory) proposed by Myers states that firms prefer to finance new investment, first internally with retained earnings, then with debt, and finally with an issue of new equity. Myers argues that an optimal capital structure is difficult to define as equity appears at the top and the bottom of the 'pecking order'. Internal funds incur no flotation costs and require no disclosure of the firm's proprietary financial information that may include firm's potential investment opportunities and gains that are expected to accrue as a result of undertaking such investments.

The agency cost theory of capital structure states that an optimal capital structure will be determined by minimizing the costs arising from conflicts between the parties involved. Jensen and Meckling (1976) argue that agency costs play an important role in financing decisions due to the conflict that may exist between shareholders and debt holders. If companies are approaching financial distress, shareholders can encourage management to take decisions, which, in effect, expropriate funds from debt holders to equity holders. Sophisticated debt holders will then require

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a higher return for their funds if there is potential for this transfer of wealth. Debt and the accompanying interest payments, however, may reduce the agency conflict between shareholders and managers. Debt holders have legal redress if management fails to make interest payments when they are due, hence managers concerned about potential loss of job, will be more likely to operate the firm as efficiently as possible in order to meet the interest payments, thus aligning their behavior closer to shareholder wealth maximization.

This paper, by using dynamic panel data techniques, investigates the determinants of capital structure of the lather sector of Bangladesh. Lather is a large industry of Bangladesh. The investigation is kept limited to Lather industry since different industries have different financing requirements. Previous researchers, including Bradley, Larrel and kim (1984) and Almazan and Molina (2005), reported that firms in a given industry develop similar capital structures. Exogenous variables appear to force firms in the same industry in similar fashion, thus leading to the existence of an industry specific capital structure. According to Eli Schwartz (1959) optimum capital structure varies for firms in different industries because the typical asset structure and earning stability which determine inherent risk vary for different types of production and thus the borrowing powers of the firm.

This paper provides further evidence of the capital structure theories pertaining Lather industries in Bangladesh. This paper is organized as follows Section 2 presents a review of the relevant literature on capital structure, and the hypotheses examined in this study. The data, research methodology and the explanatory variables are described in section 3. The results are presented and discussed in section 4. Section 5 concludes the paper.

MATERIALS AND METHODS

Data: The data set used in the analysis is constructed by lather industry's balance sheet and income statement information obtained from the Dhaka Stock Exchange. For inclusion in the sample 6 years data, from 2005-2010 is used for five lather industries. The data were averaged over the six years to smooth the leverage and explanatory variables. The sample includes listed general insurance companies of Dhaka Stock exchange in Bangladesh. The criteria used for choosing the companies were the availability and quality of data for a time of 6 years (2005-2010). The sample consists of five lather industries, which are listed, in Dhaka Stock Exchange Ltd.

Explanatory Variables: To test the hypotheses, the relationships between the level of debt and four explanatory variables representing profitability, growth, tangibility and size are examined using ordinary least square regressions. Bevan and Danbolt (2002) point out that capital structure studies examining the determinants of leverage based on total debt may disguise the significant differences between long-term and short-term debt. Therefore, in line with Bevan and Danbolt (2002) and Michaelas (1998) this study decomposes debt into long-term and short-term debt. The debt ratios considered are: total debt to total assets, short-term debt to total assets, and long-term debt to total assets.

The cross-sectional regression used in this study is based on models used in Rajan and Zingales (1995), and Bevan and Danbolt (2002), with some modifications in both the leverage and explanatory measures due to lack of data availability as discussed below.

In line with Rajan and Zingales (1995) tangibility is measured by the ratio of fixed assets to total assets. Rajan and Zingales (1995) use the market to book ratio to proxy for growth. Hence, in line with Al-Sakran (2001), and Um (2001) a company's growth is measured by the percentage change in the value of total assets. Rajan and Zingales use the natural logarithm of sales to proxy for size but there were more observations for total assets than sales, hence, following Al-Sakran (2001) and Cassar and Holmes (2003) size is measured by the natural logarithm of assets. The ratio of profit before tax to the book value of total assets is used to proxy for profitability in this paper.

Table 1 summarizes the statistics for the various explanatory variables and leverage measures for the entire sample of five lather industries of Bangladesh. From these results, it can be seen that Bangladeshi lather companies have a low rate of profitability (4.63 percent). The growth rate on average is 15.51 percent. The ratio of total debt on average is 58 percent of total book value of assets. The vast majority of the debt is, however, of a short-term nature (41% on average). Average size of the Lather companies is almost near to 5.95. Tangibility comes from the ration of fixed assets to total assets. The Lather companies are acquiring 29 percent intangible assets for its nature. The firm which have more tangible assets they can enjoy more opportunities of enjoying debt financing.

Table 1: Summary of Descriptive Statistics

	Profitability	Growth	Tangibility	Size	Short-term debt ratio	Long-term debt ratio	Total Debt ratio
Mean	0.046	15.51	0.28	5.95	0.41	0.17	0.58
Maximum	0.16	65.67	0.73	6.67	0.87	0.65	0.87
Minimum	-0.04	-24.05	0.09	5.51	0.01	0.01	0.11
Std. Dev.	0.060	21.16	0.19	0.47	0.31	0.22	0.24

Note: Profitability is defined as the ratio of earnings before tax to total assets. Growth is measured by the percentage change in total assets. Tangibility is defined as the ratio of fixed assets to total assets. Size is measured by the natural logarithm of assets. Short-term debt ratio refers to the ratio of short-term debt to total assets. Long-term debt ratio refers to long-term debt to total assets. Total debt ratio refers to the ratio of total debt to total assets.

Table 2 presents a correlation matrix of the leverage and explanatory variables. The results show that growth and size are positively related to profitability, while tangibility and long term debt has a negative relationship with profitability. This implies that larger companies and growing companies tend to have higher profitability, whereas, profitable companies tend to have less tangible assets.

Table 2: Correlation matrix

Variables	Profitability	Tangibility	Growth	Size	Short-term debt ratio	Long-term debt ratio
Tangibility	-0.493					
Growth	0.080	0.303				
Size	0.643	-0.886	0.249			
Short-term debt ratio	0.152	-0.361	-0.100	0.553		
Long-term debt ratio	-0.194	0.720	-0.040	-0.732	-0.616	
Total debt ratio	0.009	0.253	-0.180	-0.012	0.648	0.171

Despite the fact that this correlation matrix ignores joint effects of more than one variable on leverage, the tangibility and growth variables have a negative correlation with short-term debt, and a positive and negative correlation with long-term debt respectively. Profitability and size have a positive correlation with short-term debt and negative correlation with long term debt ratios. This implies that (1) Growing companies and companies with high levels of tangible assets tend to use long -term debt rather than short term debt. (2) Large and profitable companies are more likely to use short-term debt rather than long term debt.

The regression model adopted is, as follows:

$Z_i = \alpha_i + \beta_n X_n + \varepsilon$

Where:

Z_i denotes leverage and is computed as the ratio of total debt to total assets, long-term debt to total assets, and short-term debt to total assets, in alternative estimations;

X_n denotes the explanatory variables as following (n=1, 2, 3 and 4):

1- Profitability is proxied by the ratio of profit before tax to the book value of total assets;

2- Growth is measured by the percentage change in the value of assets;

3- Tangibility is measured by the ratio of fixed assets to total assets, and

4- Size is measured by the natural logarithm of total assets;

α is the intercept, and

ε is the random error term.

RESULTS AND DISCUSSION

Rajan and Zingales (1995) estimate their regression by using maximum likelihood and a censored Tobit model. They argue that the ordinary least square (OLS) results are very similar to those results that are obtained using the alternative techniques. Bevan and Danbolt (2002) have confirmed these findings. As a result, we present and discuss the OLS results only. As can be seen from Table 3, the independent variables provide low explanatory power as indicated by adjusted R2 values of 0.179, 0.472 and 0.668 for total debt, short term debt and long term debt, respectively. The ultimate cause is there are numerous factors that determine the profitability. In this study we are barely interested in studying the relationship of leverage and explanatory variables

therefore, values of individual variables' statistics are relevant with propositions of the study. Results are significant enough to serve our purpose best. The interaction coefficients in Table 3 indicate whether there is an insignificant difference between the gradients of the slopes for the lather industries.

Table 3. Result of OLS analysis over Different Measures of Leverage

The Variables	Total Debt ratio	Short-term debt ratio	Long term debt ratio
Intercept	-3.103	-5.629	2.509
	(-2.294)	(-3.955)	(2.916)
Profitability	-0.538	-2.441	1.862
	(-.600)	(-2.587)	(3.266)
Growth	-0.001	-0.003	0.002
	(-.563)	(-1.651)	(1.892)
Tangibility	1.442	1.126	0.308
	(3.024)	(2.244)	(1.017)
Size	0.554	0.990	-0.433
	(2.630)	(4.467)	(-3.236)
Adjusted R^2	0.179	0.472	0.668
F	2.581	7.483	15.565

Notes: t- Statistics are in parentheses.

To aid identification of the pertaining capital structure theories, Table 4 sets out the expected signs of the coefficients for the four explanatory variables.

Table 4. The expected signs of the coefficient for three capital structure theories

Proxy	Definitions	Trade off Theory	Asymmetric information theory	Agency cost theory
Profitability	Profit before tax to the book value of total asset	+	-	?
Tangibility	Fixed asset to total asset	+	+	+(Debt cost) -(Equity Cost)
Growth	The percentage change in the value of assets	?	+	-
Size	The natural logarithm of total assets	+	?	+

RESULTS AND DISCUSSION

If the static trade-off theory holds, significant positive slope coefficients are expected for the profitability, tangibility and size explanatory variables. For the lather industries there is little evidence for the static trade-off theory for long term debt as evidenced by the coefficients for tangibility and size. This may imply that higher tangible assets companies and larger companies will have a higher debt capacity and will, therefore, be able to borrow more, and take advantage of any tax deductibility. The conflicting results to the static trade-off theory are that the slopes for the profitability variables are negatively related with total and short term debt. Furthermore, the static trade-off theory does not predict a relationship between growth and leverage whereas a negative coefficient is observed suggesting that the static trade-off theory is not the only relevant capital structure theory for lather industries of Bangladesh.

If the information asymmetry theory holds, significant negative slope coefficients are expected for the profitability and positive slope coefficients are expected for the tangibility and growth explanatory variables. The results give a positive slope between tangibility and financial leverage. There is little evidence for the information asymmetry theory for total debt and long term debt as evidenced by the coefficients for profitability. This implies that the profitable firm uses less debt because they have enough internal funds for financing. And the positive coefficient growth and long term debt implies that he growing company uses more long term debt because they need fund for growing which cannot be fulfilled by internal fund. Furthermore, the information asymmetry theory does not predict a relationship between Size and leverage whereas a positive coefficient is observed for total and short term debt and negative coefficient is observed for long term debt suggesting that the information asymmetry theory is not fully

relevant capital structure theory for lather industries of Bangladesh.

The agency cost theory predicts a negative significant slope for growth variables, respectively and either a significant positive or negative slope for the tangibility variables. The results support the agency cost theory, as a negative relationship is evident between financial leverage and growth for total and short term debt and a positive relation of size of the company with the total and short term debt. The negative signs for the growth variables in lather industries indicate that growing companies do not rely on debt to finance their new investment opportunities. This may imply that growing companies have enough internal funds for their financing needs but, more likely, it may imply that as growing companies tend to be more risky, they prefer to use less debt.

CONCLUSION

The findings of this paper contribute towards a better understanding of financing behavior in lather industries. Hypotheses, based on comparing the relationships between long and short term debt and four explanatory variables that represent profitability, growth, tangibility and size, were developed to test which capital structure theories best explained lather industries' capital structure. The results suggest that the information asymmetry theory and Agency cost theory whereas there was satisfactory evidence to lather industries. And static trade-off theory has little support the lather industries of Bangladesh.

In the light of whole debate it is suggested that existing theories of capital structure contribute to some extant in decision-making process though certain aspects of the theories are partially refuted. The definite reason is the fact that the capital structure decision is a complex, multi-dimensional problem; thus capital structure decisions are likely to be the product of multifarious group processes. Simply it is difficult if not impossible to mull over all relevant factors with bounded rationality, at least in the current scenario. The lack of high-quality databases might constitute the major barrier on conducting capital structure research in Bangladesh. Consequently, there is a need to develop validated databases as more data becomes available in future. Using such databases can help examining and identifying additional variables that could influence the financing behavior of Bangladesh lather companies.

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