

Determinants of Capital Structure and Its Impact on the Debt Maturity of the Textile Industry of Bangladesh

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Abstract: Capital Structure is one of the most important and talked about issues in the field of finance. The fundamental components of capital structure are debt and equity of a company. Though different researchers provide different comment on the theory of capital structure, majority of theories and findings seem to contradict with each other in terms of developed and developing economy. Practitioners as well as researchers all over the world have identified that capital structure has impact on the firm performance and debt maturity. Research in capital structure is not adequate and require intense empirical work in Bangladesh. With that idea, objective of this study is to investigate the significance of determining factors of capital structure on debt maturity of the textile industry of Bangladesh. This article provided an analysis of various determining factors of capital structure and their significance on debt maturity. For this purpose, data of 19 DSE stock listed company for the time period of (2010 – 2015) 6 years were collected. Pooled data methodology has been used to find out the regression based on data collection. Findings of this data showed that age has significant relationship in case of all ratios considered under debt maturity. Growth opportunity was found as insignificant on the debt maturity. Profitability was found to have a significant relationship with total debt ratio (RTD) on the other hand converse relationship with Short term debt (RSD) and Long term debt ratio (RLD).

Keywords: Capital Structure, Leverage, Tangibility, Profitability, Ready-Made Garments, Textile

1. Introduction

The theories of capital structure are the most talked about and complicated issue in the field of finance. Relating to capital structure, two sides that are frequently focused in finance are the impact of capital structure on firm's value that is relevant to optimal capital structure and the various determinants of capital structure of firms. Decision making regulating capital structure is a very sensitive issue to all firms due to its various internal and external effects. One of the many objectives of financial managers is to maximize the wealth of the firm, more specifically shareholder's wealth maximization. To maximize firm's value as well as to minimize the cost of fund, a manager always looks to find the optimal capital structure. The fundamental components in capital structure are debt and equity. A firm should attempt to determine the optimal mixture of debt and equity that causes

the maximization of firm's value.

Capital structure policy is also important in a sense that it affects the level of risk and return of a firm. Using more debt in capital structure to finance firm's assets results in increase by the variability of firm's cash flows stream. More specifically, it leads to facing higher risk consequently, to compensate the higher risk stockholders expect a higher rate of return to firm. But no perfect theory has been developed yet to determine the exact optimal capital structure. Though different researchers provided their comment on the theories of capital structure from different viewpoint, the theories of capital structure still remain one of the most controversial issues in modern corporate finance. Not only there is any universal theory of capital structure, but also the assumptions of the several conditional theories contradict with one another. This is not the end of the story. Empirical results show no strong consensus despite decades of intensive researches. Moreover, the contemporary theories and the empirical researches are

primarily based on aspects of and data from developed western economies. Few researches are carried on the perspective of developing economies. Hence, it is hard to say whether conclusions from theoretical and empirical research carried out in developed economies are also applicable for developing economies too; or a different set of factors work in deciding capital structure in developing economies.

Bangladesh has become an emerging market with a lot of potential of investment that gets an attention for investors and managers to rethink about the influencing factors of using debt and their extent of influence over firms. Although there have been small numbers of research in Bangladesh focusing on the primary determinants of capital structure such as Chowdhury, Lima and Sayeed [9], [22], [36] still disagreement exists regarding which factors have significant impact in determining a firm's capital structure. Nevertheless, an important factor affecting capital structure determination of a firm in developed country may not be equally important to a firm in developing country like Bangladesh. Furthermore, all possible factors affecting capital structure decision have not been considered in a research at a time, and leaving some factors that still might be important to capital structure determination and there is a need to bridge between current study and capital structure theory. Therefore, the problem statement of the study is to test the influence of various capital structure determining factors on debt maturity drawn by capital structure theories, as focused in the textile industry of Bangladesh.

2. Literature Review

Modigliani and Miller's [24] propositions in capital structure reflected a significant improvement in the development of the theoretical framework within which various theories were about to come out in the future. Modigliani and Miller [24] concluded to the broadly known theory of "capital structure irrelevance" that, the firm's market value is not affected by financial leverage. However, their theory was based on predictions that are not applicable in the real world. These assumptions include perfect capital markets, homogenous expectations, no taxes, and no transaction costs.

Modigliani and Miller [26] reviewed their earlier position by including tax benefits as determinants of the capital structure of firms. The key feature of taxation is that interest is a tax-deductible expense. Based on the tax legislation of the USA, discerns three tax rates that determine the total value of the company. These are the corporate tax rate, the tax rate imposed on the income of the dividends and the tax rate imposed on the income of interest inflows. According to Miller [23], the value of the firm depends on the relative level of each tax rate, compared with the other two.

Bankruptcy costs are the cost directly incurred when the perceived probability that the firm will default on financing is greater than zero. The bankruptcy probability rises with debt level since it increases the fear that the firm might not have enough profits to pay back the interest and the loans [37]. The use of debt in capital structure of the firm also leads to agency costs. Agency costs arise as a result of the relationships

between shareholders and managers and those between debtholders and shareholders [18]. The need to balance gains and costs of debt financing emerged as a theory known as the static trade-off theory by Myers [29]. It values the firm as the value of it if unlevered plus the present value of the tax shield minus the present value of bankruptcy and agency costs.

The pecking order hypothesis suggests that firms are willing to sell equity when the market overvalues it [29], [9]. This is based on the assumption that managers act in favour of the interest of existing shareholders. As a consequence, they refuse to issue undervalued shares unless the value transfer from "old" to new shareholders is more than offset by the net present value (NPV) of the growth opportunity. This leads to the conclusion that new shares will only be issued at a higher price than that imposed by the real market value of the firm. Therefore, investors interpret the issuance of equity by a firm as signal of overpricing. If external financing is unavoidable, the firm will opt for secured debt as opposed to risky debt and firms will only issue common stocks as a last resort [2]. Myers and Majluf [29] maintain that firms would prefer internal sources to costly external finance. Thus, according to the pecking order hypothesis, firms that are profitable and, therefore, generate high earnings are expected to use less debt capital than those that do not generate high earnings.

2.1. Profitability

Huang and Song defined profitability as the ratio of earnings before interest, tax (EBIT) and depreciation to total assets (TA). From the point view of the trade-off theory, the more is the firm profitable, the higher the leverage should be due to debt tax deductibility of interest payment. Rajan and Zingales [35] further argue that profitable firms should be lent more willingly by debt suppliers.

For firms with free cash flow, or high profitability, high debt can restrain management discretion. In contrast to theoretical studies, most empirical studies show that profitability has strong negative influence on leverage. Friend and Titman [15], [39] obtain such findings from the US firms. Kester [21] finds that leverage is negatively related to profitability in both the USA and Japan. More recent studies using international data also confirm this finding for developing countries [35], [40], [6], [42]. Long and Maltiz [23] find leverage to be positively related to profitability, but the relationship is not statistically significant. In this study, profitability is defined as net income scaled by total asset. In addition, profitable firms prefer not to raise external equity in order to avoid potential dilution of ownership. Thus, it might be expected an inverse relation between profitability and leverage [11], [12].

2.2. Tangibility

Titman and Harris [38], [15] argue that tangibility might play a vital role in determining the firm's debt levels. However, if debt is secured against assets, the borrower is restricted to using loaned funds for a specific project, and

creditors have an improved guarantee of repayment. Thus, firms with high level of fixed assets would have higher level of debt. Bevan and Danbolt [4] argue that if the tangibility provides a reasonable replacement for the availability of depreciation tax shields, the tax-based hypothesis of Deangelo and Masulis [10] would expect a negative rather than a positive association between leverage and tangibility.

Jensen and Meckling [18] find out that the agency cost of debt exists as the firm may shift to riskier investment after issuing debt, and transfer wealth from creditors to shareholders to exploit the option nature of equity. If a firm's tangible assets are high, then these assets can be used as collateral, diminishing the lender's risk of suffering such agency costs of debt. Hence, a high fraction of tangible assets is expected to be associated with high leverage. Also, tangible assets value should be higher than intangible assets in case of bankruptcy. Harris and Williamson [15], [40] suggest leverage should increase with liquidation value; both papers suggest that leverage is positively correlated with tangibility.

2.3. Size

From the point view of the trade-off theory, firms trade-off between the benefits of leverage such as tax savings or mitigation of agency problems against the costs of leverage such as the costs of bankruptcy. Rajan and Zingales [35] argue that large firms tend to be more diversified and so suffer bankruptcy less often. Accordingly, an observed positive dependence is expected between leverage and firm size. Moreover, Bevan and Danbolt [4] argued that due to credit rating, large firms are more likely to have access to non-bank debt financing. In turn, this too would suggest a positive relationship between size and debt.

Marsh finds that large firms more often choose long term debt (LTD), while small firms choose short-term debt (STD). Large firms may be able to take advantage of economies of scale in issuing LTD, and may even have bargaining power over creditors.

So the cost of issuing debt and equity is negatively related to firm size. On the other hand, size may also be a proxy for the information that outside investors have. Fama and Jensen [14] argue that larger firms tend to provide more information to lenders than smaller ones. Rajan and Zingales (1995) argue that larger firms tend to disclose more information to outside investors than smaller ones. Overall, larger firms with less asymmetric information problems should tend to have more equity than debt and thus have lower leverage [25], [8].

Additionally, many theoretical studies including Harris, Narayanan, Noe, Poitevin and Stulz [15], [31], [32], [34], [37] suggest that leverage increases with the value of the firm. Empirical studies such as Booth, Rajan, Chen, Wiwattanakantang and Wald [6], [35], [7], [40], [42] also found that leverage is positively correlated with firm size.

2.4. Growth Opportunities

Theoretical studies generally suggest growth opportunities are negatively related with leverage. On the one hand, as Jung [20]

show, if management pursues growth objectives, management and shareholder interests tend to coincide for firms with strong investment opportunities. But for firms lacking investment opportunities, debt serves to limit the agency costs of managerial discretion as suggested by Jensen, Stulz and Berger [19], [37], [3] also confirm the disciplinary role of debt. On the other hand, debt also has its own agency cost. Myers [27] argues that high-growth firms may hold more real options for future investment than low-growth firms. If high-growth firms need extra equity financing to exercise such options in the future, a firm with outstanding debt may forgo this opportunity because such an investment effectively transfers wealth from stockholders to debt holders [10], [17], [28].

There are different proxies for growth opportunities; however, the differences in growth proxies used seem to have a moderating effect on the relationship between growth and leverage. Wald [41] uses a five-year average of sales growth. Titman and Wessels [38] use capital investment scaled by TA as well as research and development scaled by sales to proxy growth opportunities.

2.5. Age of the Firm

Age of the firm is a standard measure of status in capital structure models. Before granting a loan, banks tend to evaluate the creditworthiness of entrepreneurs as these are generally believed to pin high hopes on very risky projects promising high profitability rates. Petersen and Rajan [33] found that older firms have higher debt ratios since they should be higher quality firms and confirmed that age is positively related to long term debt but negatively related to short term debt [11], [16].

2.6. Liquidity

Liquidity ratios have both a positive and a negative effect on the capital structure decision, and so the net effect is unknown. First, firms with high liquidity ratios may have relatively higher debt ratios due to their greater ability to meet short-term obligations. This argument suggests a positive relationship between liquidity of a firm and its debt ratio. Alternatively, firms with more liquid assets may use such assets as sources of finance to fund future investment opportunities.

A further argument for a negative relationship is provided by Myers and Rajan [30] who argue that when agency costs of liquidity are high, outside creditors limit the amount of debt financing available to the firm. Thus, a negative relationship between debt and liquidity would be expected. Similarly, the effect of asset liquidity is an ambiguous signal to institutional investors. A high liquidity ratio may be considered to be a negative signal because it indicates that the firm faces problems regarding opportunities for its long-term investment decisions. Hence, a high liquidity ratio may be considered to be a negative signal for institutional investors. However, a high liquidity ratio may be considered to be a positive signal from the firm, because it indicates that the firm can easily pay its obligations and hence faces lower risk of default. Thus, high liquidity would be a positive

signal for institutional investors.

3. Research Question

(1) Is there any significant relationship between profitability and debt maturity?

(2) Is there any significant relationship between growth (G) and debt maturity?

(3) Is there any significant relationship between size and debt maturity?

(4) Is there any significant relationship between age and debt maturity?

(5) Is there any significant relationship between TAN and debt maturity?

(6) Is there any significant relationship between LQ and debt maturity?

4. Hypotheses

Table 1. Hypothesis.

Null Hypothesis	Alternative hypothesis
Ho ₁ : There is a significant relationship between profitability and debt maturity	Ha ₁ : There is a significant relationship between profitability and debt maturity
Ho ₂ : There is a significant relationship between growth (G) and debt maturity.	Ha ₂ : There is a significant relationship between growth (G) and debt maturity.
Ho ₃ : There is a significant relationship between size and debt maturity.	Ha ₃ : There is a significant relationship between size and debt maturity.
Ho ₄ : There is a significant relationship between age and debt maturity.	Ha ₄ : There is a significant relationship between age and debt maturity.
Ho ₅ : There is a significant relationship between TAN and debt maturity.	Ha ₅ : There is a significant relationship between TAN and debt maturity.
Ho ₆ : There is a significant relationship between LQ and debt maturity.	Ha ₆ : There is a significant relationship between LQ and debt maturity.

5. Methodology

5.1. Data Collection

This study was based on secondary data and it investigated nineteen firms selected from textile industry. Conferring from BGMEA there are 3508 listed textile companies in Bangladesh and only 43 companies are listed in Dhaka Stock Exchange [5], [13]. So, this is not possible to take all the garments as population for this research. For this reason, to

achieve a feasible result a sampling procedure has been conducted. For doing this research, the total sample size for the research is 19 DSE listed textile company.

5.2. Regression Model

Based on the review of previous studies with respect to the main determinants of capital structure and debt maturity, the following three models are formulated to state the hypothesized relationship:

$$RTD = \beta_0 + \beta_1 ROA + \beta_2 G + \beta_3 Size + \beta_4 Age + \beta_5 TAN + \beta_6 LQ + \mu \tag{1}$$

$$RSD = \beta_0 + \beta_1 ROA + \beta_2 G + \beta_3 Size + \beta_4 Age + \beta_5 TAN + \beta_6 LQ + \mu \tag{2}$$

$$RLD = \beta_0 + \beta_1 ROA + \beta_2 G + \beta_3 Size + \beta_4 Age + \beta_5 TAN + \beta_6 LQ + \mu \tag{3}$$

Table 2. Variables.

Variables	Symbol
Total Debt Ratio	RTD
Short Term Debt Ratio	RSD
Long Term Debt Ratio	RLD
Return on Asset	ROA
Firm Size	Size
Growth Opportunity	G
Age of The Firm	Age
Tangibility	TAN
Liquidity	LQ

5.3. Data Analysis

5.3.1. Descriptive Analysis

This study conducted descriptive statistics to describe the basic features of the data in sample. As shown under table 3, the mean of the ratio of long-term debt was 28.26% which was quite lower than the ratio of short-term debt 71.55% and also lower than ratio of total debt 67.49%. Average return on asset is 3.97%. As growth have negative value, that indicate some garments are not performing good. The average liquidity was 1.3166, it indicated that current assets were 1.3166 times higher than current liabilities and which was not too satisfactory in terms of liquidity.

Table 3. Descriptive Analysis.

	RLD	RSD	RTD	ROA	G	SIZE	AGE	TAN	LQ
Mean	0.2826	0.7155	0.6749	0.0397	0.1403	21.018	23.105	0.4931	1.3166
Median	0.2440	0.7560	0.6490	0.0350	0.0690	21.171	22.000	0.4940	1.1110
Maximum	0.7220	0.9980	2.7040	0.1780	1.6190	22.904	51.000	0.9080	3.7590
Minimum	0.0020	0.2780	0.1040	-0.3190	-0.3520	19.088	3.0000	0.1110	0.1320
Std. Dev.	0.2168	0.2166	0.3834	0.0602	0.2785	0.9340	10.997	0.1811	0.7559

5.3.2. Regression Analysis

From eViews mentioned under Table 4, we got the following regression of all models are (Taking 3 digits after decimal):

$$RLD=4.28-2.896*ROA-0.034*G-0.144*Size-0.00*Age-0.368*TAN-0.171*5LQ \quad (4)$$

$$RSD=0.866+0.371*ROA-0.005*G+0.012*Size-0.007*Age-0.292*TAN-0.085*LQ \quad (5)$$

$$RTD=0.173-0.361*ROA+0.007*G-0.014*Size+0.007*Age+0.291*TAN+0.087LQ \quad (6)$$

Table 4. Regression Analysis.

	Model 1 (DV=RTD)	Model 2 (DV=RLD)	Model 3 (DV=RSD)
R-squared	0.625408	0.328279	0.329734
Adjusted R-squared	0.599868	0.282480	0.284034
β_0	4.283576	0.866750	0.173125
ROA	-2.896896	0.371577	-0.361442
G	-0.034937	-0.005156	0.007688
SIZE	-0.144207	0.012387	-0.014459
AGE	-0.002157	-0.007304	0.007263
TAN	-0.368426	-0.292248	0.291055
LQ	-0.171667	-0.085613	0.087588
F-statistic	24.48709	7.167808	7.215189
Prob (F-statistic)	0.000000	0.000003	0.000003

According to the result of model 1, Here, the value of R-Square is 0.625 which means that the independent variables explain long term debt ratio by 62.5%. As a result, all alternate hypothesis will be accepted and all null hypothesis will be rejected. Model 1 probability F-statistic is 0.00 and that is statistically significant at the significance level of 10%. So the model has adequate goodness of fit.

According to the result of model 2, the value of R-Square is 0.328 which means that the independent variables explain long term debt ratio by 32.8%. As a result, all alternate hypothesis will be accepted and all null hypothesis will be rejected. Model 2 probability F-statistic is 0.000003 and that is statistically significant at the significance level of 10%. So

the model has the goodness fit.

From the result of model 3, the value of R-Square is 0.329 which means that the independent variables explain long term debt ratio by 32.9%. As a result, all alternate hypothesis will be accepted and all null hypothesis will be rejected. Model 2 probability F-statistic is 0.000003 and that is statistically significant at the significance level of 10%. So the model has the goodness fit.

5.3.3. Hypothesis Testing

Considering the significance level 10%, if $p \leq 0.10$, null hypotheses (H0) will be rejected and alternate one will be considered. The value has been shown under Table 5.

Table 5. P-value test.

Variables	Model 1 (DV=RTD)	Decision	Model 2 (DV=RLD)	Decision	Model 3 (DV=RSD)	Decision
ROA	0.7266	Null Hypothesis Accepted	0.0827	Null Hypothesis Rejected	0	Null Hypothesis Rejected
G	0.3082	Null Hypothesis Accepted	0.2951	Null Hypothesis Accepted	0	Null Hypothesis Rejected
SIZE	0.9143	Null Hypothesis Accepted	0.9425	Null Hypothesis Accepted	0.7115	Null Hypothesis Accepted
AGE	0.5365	Null Hypothesis Accepted	0.5965	Null Hypothesis Accepted	0	Null Hypothesis Rejected
TAN	0.0003	Null Hypothesis Rejected	0.0002	Null Hypothesis Rejected	0.3939	Null Hypothesis Accepted
LQ	0.0118	Null Hypothesis Rejected	0.0115	Null Hypothesis Rejected	0.0157	Null Hypothesis Rejected

Table 6. Significant Variables.

Model 1	Model 2	Model 3
TAN	ROA	ROA
LQ	TAN	G
	LQ	AGE
		LQ

6. Findings

Throughout the study, the objective was to investigate the

significance of determining factors of capital structure on debt maturity in the context listed textile companies in Bangladesh. In order to achieve the goal, this study gathered secondary data of 6 years (2010 to 2015) of nineteen publicly listed companies traded in Dhaka Stock Exchange [13] and Panel data methodology was used to analyse different information. This study indicated that profitability had a significant relationship with ratio of short term debt but not with ratio of long term debt and ratio of total debt. There was significant relationship between growth and ratio of total debt. Size was found as significant with total debt ratio but

not with the rest two. Firm age had a significant impact on debt maturity without the ratio of long term debt and total debt. Tangibility had a significant relationship with ratio of total debt but not with the ratio of short term debt and long term debt. In case of liquidity, there was no significant relationship between liquidity and ratio of long term debt and ratio of short term debt but the ratio of total debt reflected that the relationship was significant. An important finding of this study was that some factors working on firm's capital structure in other countries also work in a similar fashion in Bangladesh. However, some results were almost consistent with the previous studies based on Bangladeshi firms.

7. Conclusion

One of the many objectives of financial managers is to maximize the wealth of shareholders. Shareholders' wealth maximization depends on some issues like managing lower cost of capital, generating tax shield benefits from debt financing, reducing the agency costs of debt and equity etc. And all these issues are determined and managed by reaching at a point of optimal capital structure. As a result, financial managers strive to ensure the optimal mix of debt and equity in the firm's capital structure. According to Abdullah [1] manufacturing industry is contributing 17% of gross domestic product of Bangladesh. So textile industry has a bright future. By managing the capital structure of ready-made garments not only the investor interest will be protected but also our country will gain more GDP from textile industry. However, Capital structure is an important factor for a ready-made garment. Proper design and utilization of capital structure and debt can lead a garment to maximize its value. This study might be used as a guideline for understanding different determining factors of capital structure and their relationship with debt maturity. Different financial and statistical tools were used to examine the relationship between them.

This study conducts an analysis of the significance of capital structure on debt maturity on nineteen ready-made garments. Even though the analysis has been built on known research methods and models used in several similar studies in Bangladesh and also in other countries, the findings of this study are unique. This study will help to understand the general practices of capital structure in Bangladesh including the sensitivity of debt maturity. This will also act as a guide for the financial managers to design their capital structure and utilize debt properly to maximize the market value of the firm. While the researchers here gathered and analysed the information of nineteen Textile Companies, the results would be more reliable if number of observations was increased. However, this study had some limitations such as mix result limitation. Further research is needed to improve this study more. Finally, the limitations revealed through the study can open the door to conduct further research on capital structure determinants which will surely lead to significant new insights.

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