Capital Structure Determinants of Non-Bank Financial Institutions (NBFIs) in Bangladesh

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This research examines the relative importance of eight factors in the capital structure decisions of Non-bank Financial Institutions in Bangladesh. Existing empirical research on capital structure has largely been confined to developed countries. The papers related to emerging economies usually group several countries together. The Bangladesh Financial Market has been developing at an exponential rate and dedicated research in this field is required. The study utilizes a larger data set in comparison to the earlier studies on Bangladesh and examines additional factors. We used data of 24 firms for the period of 2006-2008 regardless of listing status. The objective of this study is to build on previous studies on the Bangladeshi capital market and model all the important factors affecting capital structure decisions of NBFIs in Bangladesh. It is found that factors such as debt service coverage, liquidity ratio, growth rate, operating leverage, firm size and age of the firm have significant influences on the leverage structure chosen by NBFIs in the Bangladesh context.

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1. Introduction

What are the most influencing factors of capital structure decision? A large number of researches has been done in the corporate literature to ascertain the answer of this critical question through theoretical and empirical means. After publication of the MM Propostion (1959, 1963), this question has got special value in the field of finance. To determine the optimal capital structure is one of the most fundamental policy decisions of the financial framework of a corporate entity. As optimal debt ratio influences the market value of the firm, companies examine different level of capital structure to maximize their market value. Thus a handful of capital structure theories (MM theory, agency theory, pecking order theory, and trade off theory) have been emerged with an aim to help firms determine the optimal capital structure. However it is yet to define any universal theory of capital structure even after decades of serious research, which leaves the topic open for further research.

The economy of Bangladesh is extremely focused on the capital market. It has followed each and every pattern of the capital market in last couple of years. NBFIs play a major

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role in this respect because they provide a large portion of institutional support to the capital market. Thus the development of capital market needs simultaneous development of the associate institutions like NBFIs. It is evident that a prudent capital structure decision can lead a firm to have high profitability and low risk thus increase the value of the firm. So capital structure decision is one of the most important issues in corporate finance. There might be several factors that affect the capital structure. Correctly identifying the factors and their mode of effects can help the practitioners to take decisions wisely. However no particular research has so far been undergone to find out the capital structure determinants of NBFIs in Bangladesh. Thus a gap exists in the literature of capital structure of NBFIs in Bangladesh and this study has been conducted with the intention to fill up this gap. The analysis presented in this study seeks to answer the research question: "What are the most important factors of capital structure of Non-Bank Financial Institutions (NBFIs) in Bangladesh?" In addition to cross sectional analyses we tried to explore the dynamics by means of a fixed effect panel study.

The data used in this study is panel data which come across the effects of heteroscedasticity and autocorrelation. The previous literatures in Bangladesh on capital structure determinants have used multiple regressions which do not correct this problem. This study has used Feasible Generalized Least Square (FGLS) method which automatically corrects both the problem in data. Besides, in Bangladesh no such research has been done specially on NBFIs. Chowdhury, MU 2004 made a comparison of the capital structure determinants between Japanese and Bangladeshi firms. Lima, M 2009 examined the determinants of capital structure of pharmaceutical companies in Bangladesh. Sayeed, MA 2011 studied on some selected companies irrespective of industry. This study differentiates itself by targeting only the NBFIs in Bangladesh.

The report is organized as follows: Section 2 provides a brief review of the previous studies; Section 3 briefly gives the description of variables along with hypotheses; Section 4 explains the data used in this study; Section 5 specifies the model development and research methodology. It is followed bysection6 describing the results of the output received from the FGLS model run through STATA. Section 7concludes this study by providing limitations and the future directions.

2. Literature Review

For the sake of better understanding we have reviewed some literatures concerning the capital structure determinants of different countries, different industries as well as different economies. Not all the reviews are highly cited in this study because they are not explicitly related to capital structure of non-bank financial institutions.

Jong, AD, Kabir, R and Nguyen, TT 2008 tested the significance of firm specific and country specific factors in the financing decisions of firms across 42 countries. Though early studies suggest that firm specific and country specific factors have equal impact on debt ratio, they found that the effect of these two specific factors differ across countries. They also found positive relationship between tangibility, liquidity and debt

ratio and non-significant negative relationships between size, profitability, tax, and risk and debt ratio.

Rao, SN and Jijo, LPJ 1992 investigated the determinants of capital structure of listed Indian companies. They compared the analysis between pre-liberalization and post-liberalization periods. All of the factors that they measured for hypothesis such as; profitability, tangibility, taxes and growth rate were proved to be statistically significant. In addition, size and risk measures were proved to be the additional factors that influence capital structure decision during post-liberalization period. They measured leverage both in book and market value. However leverage in terms of market value reveals better goodness of fit.

Bevan, AA and Danbolt, J 2000 analyzed the dynamics in the capital structure for UK companies from 1991 to 1997. They observed significant changes in the relative importance of the various leverage elements over time, as well as changes in the relationship between leverage and the level of growth opportunities, company size, profitability and tangibility. The results of their study suggest that the nature of the credit market in the UK changed significantly during 1990s, with large companies using less bank finance and banks increasingly lending to smaller firms. Besides, bank debt appeared to become more closely related to corporate profitability and collateral values.

Pandey, IM2001 examined the determinants of capital structure of Malaysian companies utilizing data from 1984 to 1999. He classified all the data into four sub-periods that correspond to different stages of Malaysian capital market. The results of his study found that profitability, size, growth, risk and tangibility variables have significant influence on all types of debt. Unlike the evidence from the developed markets, investment opportunity (market-to-book value ratio) had no significant impact on debt policy in the emerging market of Malaysia. And Profitability had a persistent and consistent negative relationship with all types of debt ratios in all periods and under all estimation methods.

The paper of Frank, MZ and Goyal, VK 2007 examines the relative importance of many factors in the leverage decisions of publicly traded American firms from 1950 to 2003. The most reliable factors they found were median industry leverage (positive effect on leverage), market-to-book ratio (negative effect on leverage), tangibility (positive effect on leverage), profits (negative effect on leverage), log of assets (positive effect on leverage), and expected inflation (positive effect on leverage).

Kakani, RK & Reddy, VN 1998 have attempted to find the determinants of capital structure in India and to look into the managerial implications of the same. Findings suggest firm's diversification strategy and size to be insignificant and profitability and capital intensity to be the most significant and negative factors in deciding the capital structure of the Indian firms. In addition, earnings volatility and non-debt tax shields were found to be significantly negatively related to short-term and total debt of the firms. Uniqueness of the firms was proved to be a significant factor in the determination of short term and total debt of the firms.

Shah, A & Hijazi, T 2004 used pooled regression model of panel data analysis to measure the determinants of capital structure in listed Pakistani non-financial firms for five-year period. The results found that asset's tangibility is positively related to debt; though the relationship is not statistically significant. They also found that size measured by taking the log of sales is positively related to leverage. This suggests that large firms will employ more debt. Growth measured by the annual percentage change in total assets is negatively related to leverage that supports the simple version of pecking order theory that growing firms finance their investment opportunities first by their internally generated funds. They found strong relationship between profitability and leverage.

Pathak, J 2005 studied the leverage decisions of Indian firms. His study explains the observed variation in capital structure using a regression model. He identified six major factors (tangibility, firm size, growth, profitability, liquidity) and one second tier factor (R&D) that are related to leverage decisions. He found that leverage increases with increase in Firm Size, Tangibility and Growth. In contrast, he found that leverage increases with the decrease in Business Risk, Profitability, and Liquidity.

Chowdhury, MU 2004 in his empirical study focused on the cross-sectional differences in debt ratios between firms in Japan and Bangladesh on agency cost model of capital structure. The study is consistent with the previous studies that due to institutional differences between Japan and Bangladesh agency structure should be different. Moreover, in the Japanese corporate governance system, financial institutions are motivated by a desire to lessen one or both of the agency conflicts between shareholders and manager and shareholders and debt-holders which actively monitor the firm in which they invest; and thereby contribute towards mitigating the agency conflicts more effectively compared to Bangladesh.

Lima, M 2009 attempted to focus on the factors determining the capital structure choice and conformity of the factors with the predictions drawn by the competing capital structure theories in the context of Bangladesh. She used multiple regression model for the pooled data of listed pharmaceutical companies in Bangladesh considering agency cost of equity, growth rate, operating leverage, bankruptcy risk, tangibility and debt service capacity as the explanatory and the debt ratio as the dependent variable. All the six variables she used proved to be statistically significant determinants of capital structure. In her study, growth rate, operating leverage, tangibility and debt service capacity were positively related to the capital structure whereas agency cost of equity and bankruptcy risk showed negative relation to debt ratio.

Sayeed, MA 2011 used panel data OLS and Tobit regression for panel data with cross section random effects to find out the determinants of capital structures of selected Bangladeshi listed companies. He used data from 46 companies listed in Dhaka Stock Exchange (DSE) for seven years (1999 – 2005). He showed total debt to market value of the company as the leverage ratio in one equation and long term debt to market value in another equation. The outcome found were agency cost (- effect on leverage), tax rate (+), debt tax shields such as depreciations (-), firm size (+), Collateral value of

assets (+). Industry subsumes a number of smaller effects. Bankruptcy costs and profitability are irrelevant in determining leverage ratios.

The only three studies on the Bangladeshi companies that are similar to this study are of Chowdhury, MU 2004, Lima, M 2009 and Sayeed, MA 2011. But none of these previous study answers what the most important factors of capital structure of NBFIs in Bangladesh are.

3. Determinants of Capital Structure

3.1 Measures of Leverage (Dependent Variables)

The study uses long term debt ratio, short term debt ratio and total debt ratio as the dependent variables. No such studies in Bangladesh have examined the determinants of short term debt ratio of the firms before. Thus, this study has improved the previous studies by attempting to determine the factors of short term debt ratio of NBFIs in Bangladesh.

Evaluation of optimal leverage varies among literatures. Because of the difficulty to manage market data, many researchers have chosen to use book data. Myers, SC 1983 says that managers focus on book leverage because debt is better supported by assets than it is by the growth opportunities. Another reason to choose book leverage is that financial markets fluctuate a great deal and managers are said to believe that market leverage numbers are capricious as a guide to corporate financial policy (Frank, MZ & Goyal, VK 2007 and Myers, SC 1983). Besides, for debt contracts, firms prefer to use book value. Hence, we measure debt in terms of book value rather than market values. For this study, we use three definitions of leverage and present the data accordingly.

1) Long Term Debt Ratio: Long term debt ratio characterization utilizes just the long term debts over the total assets. Titman, S and Wessels, R 1988 and others used long-term debt ratio in their determinants study.

2) Short Term Debt Ratio: Short term debt ratio is measured by short term debt over total assets of the companies.

3) Total Debt Ratio: Our definition of total debt ratio uses a sum of debt in current liabilities and long term liabilities over the total assets (Jong, AD, Kabir, R and Nguyen, TT 2008).

Booth, L, Aivazian, V, Demirguc-Kunt, A and Maksimovic, V 2001 and Frank, MZ &Goyal, VK 2007 surveys suggest that capital structures of firms follow various theories such as agency theory, trade-off theory and pecking order theory. However, Myers, SC 1983 states that there is no universal theory of capital structure, so we can not follow any theory strictly to determine capital structure. Some factors can be applied for some firms, or in some cases, inappropriate elsewhere. Cotei, C and Farhat, J 2009 concluded that Indian firms follow the trade-off theory. Nonetheless, Kurshev, A and

Strebulaev, IA 2005 found that the trade-off theory predictions about profitability are more complex than those based on static models. Due to significant lack of consensus on the determinants of capital structure, we do not follow any specific capital structure theory while studying the Bangladeshi NBFIs capital structure scenario.

3.2 Firm Specific Independent Variables

3.2.1 Debt Service Coverage-DSC (Hypothesis 1)

The debt service coverage ratio is considered to be the division of the EBIT by Financial Expenses and this ratio indicates the firms' ability to meet its interest expenses out of its annual operating income (Keoun, AJ et al. 1986). So, higher the debt service ratio, higher the capacity of the companies to service debt. According to trade-off theory, firms with more EBIT borrow more, to shield their income from corporate tax. Thus, the high debt capacity ratio (supported by high EBIT) is deemed to have positive relation with the capital structure of the companies. Agency theory says that firm's ability to service its debt reduces agency cost and motivates the use of debt to get high tax shield benefit from higher EBIT. Based on the theoretical considerations and the majority of the prior empirical evidence, we make the following hypothesis:

H1: Long term debt ratio, short term debt ratio and the total debt ratio are positively related to the debt service coverage ratio

3.2.2 Liquidity Ratio-LR (Hypothesis 2)

Consistent with Jong, AD, Kabir, R and Nguyen, TT 2008 we agree that the liquidity that is the accumulated cash and other liquid assets will serve as the internal source of fund and will be utilized first place of debt. Therefore, we propose that liquidity has a negative effect on leverage. Liquidity was calculated by dividing the total current assets by the total current liabilities.

H2: Long term debt ratio, short term debt ratio and the total debt ratio are negatively related to the liquidity ratio

3.2.3 Tangibility Ratio-TR (Hypothesis 3)

Tangibility ratio (TR) is measured as a ratio of fixed assets divided by total assets. The numerator is the total gross amount of fixed assets. Total gross amount of fixed assets is used rather than net depreciated value of assets because (a) different firms may follow different deprecation methods which may create unevenness in the data (b) a firm can pledge an asset having a market value even if it has been fully depreciated. Tangibility means an asset can be used as collateral to secure debt. A firm with huge amount of fixed asset can borrow at relatively lower rate of interest by keeping these assets to creditors as security. Myers, SC and Majluf, NS 1983 states that firms with more tangible assets tend to take more debts to take the advantage of low cost. As a result, we expect a positive relationship between tangibility of assets and leverage.

H3: Long term debt ratio, short term debt ratio and the total debt ratio are positively related to the tangibility ratio

3.2.4 Profitability Ratio-PR (Hypothesis 4)

We measure profitability (PR) as the ratio of net income after taxes divided by total shareholders' equity. Previous studies have used earnings before interest and taxes (EBIT) divided by total assets, as a measure of profitability as it is independent of leverage effects. However we use the said measure to avoid autocorrelation in the data used. According to the pecking order theory firms tend to use equity first and then resort to debt. Likewise Booth, L, Aivazian, V, Demirguc-Kunt, A and Maksimovic, V 2001say that profitable firms might be able to finance their growth internally by using retained earnings and keep a constant debt- equity ratio. However, less profitable firms do not have such choices and they are forced to go for debt financing. This means that profitable firms generally have less amount of leverage. Based on the previous studies we expect a negative relationship between profitability and leverage.

H4: Long term debt ratio, short term debt ratio and the total debt ratio are negatively related to the profitability ratio

3.2.5 Growth Rate-GR (Hypothesis 5)

Growth rate is calculated by using the formula $\{(TA_t/TA_{t-1})\}-1$ where TA means total asset of the firm. Empirically, there is much controversy about the relationship between growth rate and the level of leverage. Following the studies of Sinha, S 1992 and Myers, SC1984 higher growth rate implies higher leverage of the firm. Chowdhury, MU2004 also expects a positive sign between growth opportunities and leverage. According to pecking order theory hypothesis, a firm will use internally generated funds at first and then debt financing which implies that a growing firm will have a high leverage (Drobetz, W and Fix, R 2003). High growth rates are expected to be accompanied by high debt ratios due to insufficient additions to retained earnings. So, it is believed that firms growing at higher rates should have higher debt ratios than firms with lower growth rates. In some cases, internally generated funds may not be sufficient to maintain the high growth rates, thus firms require the use of external financing. As additional risk premium is required by equity holders as residual claimants for high growth firms, the cost of equity capital may be distorted in relation to the cost of debt capital. Therefore,

H5: Long term debt ratio, short term debt ratio and the total debt ratio are positively related to the growth rate

3.2.6 Operating Leverage-OL (Hypothesis 6)

Operating leverage is measured by the use of fixed costs in the operation of the firms. We have calculated the operating leverage by dividing the EBIT by Operating Revenue. If a firm employs a greater amount of fixed costs and a small amount of variable costs, it has a high degree of operating leverage. Some other studies state that if the firm incurs a greater amount of variable costs and employs a small amount of fixed cost then it will

have a lower degree of operating leverage. Previous studies have shown that the operating leverage is one of the most important determinants of debt level in a firm's capital structure. So, management of companies with high operating leverage should use relatively lower levels of debt. Therefore, operating leverage is expected to be inversely related to debt ratio.

H6: Long term debt ratio, short term debt ratio and the total debt ratio are negatively related to the operating leverage

3.2.7 Firm Size-FS (Hypothesis 7)

We measure size (FSIZE) of the firm by taking the natural log of total operating revenue as this measure smoothens the variation in the figure over the periods of time. The empirical evidence about the impact of firm size on debt ratio is uncertain. Stohs, MH and Mauer, DC 1996 and Michaelas, N, Chittenden, F and Poutziouris, P 1999 found debt maturity to be positively related to company size while Barclay, MJ, Smith, CW and Watts, RL 1995 found the correlation between size and gearing reverses polarity, dependent upon whether the estimation is pooled OLS, or a fixed effects panel regression. Besides, Rajan, RG and Zingales, L 1995 and Crutchley, CE, and Hanson, RS 1989 discovered a significant positive correlation between firm size and debt ratio. Despite the inconsistencies in the empirical evidence, we hypothesize:

H7: Long term debt ratio, short term debt ratio and the total debt ratio are positively related to the firm size

3.2.8 Age-age (Hypothesis 8)

A firm is supposed to rely more on its equity than its debt as it grows older. As the time goes on, firm's strength increases. So firm try to withdraw its dependence on debt over time. The short term debt remains to carry out the day to day operation. But long term debt goes down to get over from the fixed cost of financing expense. Thus we hypothesize that:

H8: Long term debt ratio, short term debt ratio and the total debt ratio are negatively related to the age of the firm

4. Data

This study is based on secondary data. The main source of data is the Department of Financial Market and Institutions of Bangladesh Bank. Information was collected from the database maintained by Bangladesh Bank (The Central Bank of Bangladesh) on the Non-Bank Financial Institutions of Bangladesh. It includes data of total 24 listed and non-listed financial institution among 29 NBFIs in Bangladesh. The sample period covers the years 2006-2008 and the total number of observations was 72. These 24 companies have been chosen based on their data availability, consistency of performance and favorable figures. The rest 5 companies are excluded to avoid complicacy of statistical analysis and inconsistency in observation in balance sheet. The

study was dependent on the availability of data from Bangladesh Bank (BB). As BB agreed to provide data only from 2006, it was not possible to consider pre-2006 data.

Descriptive statistics of the variables are listed in Table One.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LTDR	72	.15	.92	.7139	.15669
STDR	72	.09	2.98	.7204	.56005
TDR	72	.62	3.49	1.4344	.52764
DSC	72	.25	8.11	1.6339	1.13150
LR	72	.48	2.80	1.2839	.45792
TR	72	.00	.14	.0218	.02759
PR	72	.03	.31	.1501	.05999
GR	72	-.81	1.53	.2717	.39176
OL	72	.25	1.00	.7994	.15376
FS	72	10.83	14.69	13.0828	.77482
AGE	72	4.00	13.00	9.3750	2.48056
Valid N (listwise)	72				

Table one shows that on an average the NBFIs in Bangladesh use 71.39% of long term debt and 72.04% of short term debt in their capital structure. Thus portion of total debt is more than equity in the capital structure. It can be said that NBFIs in Bangladesh are heavily dependent on debt. However debt service coverage ratio is pretty high showing a mean of 1.63 over the years.

5. Model Specification

Feasible Generalized Least Square (FGLS) Model (using STATA) was used to measure the impact of explanatory variables on the dependent variables.[1]Feasible generalized least square (FGLS or Feasible GLS) is a regression technique. It is similar to generalized least squares except that it uses an estimated variance-covariance matrix since the true matrix is not known directly.

The data used in this study was panel data by nature which could have the problem of heteroscedasticity. The reason behind using this model is that it automatically corrects the heteroscedasticity among the variables and there remains no autocorrelations. The P>|z| value determines which explanatory variables are significant at 5% significance level. It provides a good number of significant variables to be related to the leverage measures.

5.1 Estimated Regression Equation

We estimate the relationship between debt service coverage ratio, liquidity ratio, tangibility ratio, profitability ratio, growth rate, operating leverage, firm size and age against individual debt components using Feasible Generalized Least Square (FGLS) regression. The estimated regression model is specified in equation 1, 2 and 3

LTDR $= \beta_0 + \beta_1 \ DSC_{i,t} + \beta_2 \ LR_{i,t} + \beta_3 \ TR_{i,t} + \beta_4 \ PR_{i,t} + \beta_5 \ GR_{i,t} + \beta_6 OL_{i,t} + \beta_7 \ FS_{i,t} + \beta_8 \ AGE_{i,t} + \varepsilon$ ....(1)

STDR $= \beta_0 + \beta_1 \ DSC_{i,t} + \beta_2 \ LR_{i,t} + \beta_3 \ TR_{i,t} + \beta_4 \ PR_{i,t} + \beta_5 \ GR_{i,t} + \beta_6 OL_{i,t} + \beta_7 \ FS_{i,t} + \beta_8 \ AGE_{i,t} + \varepsilon$ .... (2)

TDR $= \beta_0 + \beta_1 \ DSC_{i,t} + \beta_2 \ LR_{i,t} + \beta_3 \ TR_{i,t} + \beta_4 \ PR_{i,t} + \beta_5 \ GR_{i,t} + \beta_6 OL_{i,t} + \beta_7 \ FS_{i,t} + \beta_8 \ AGE_{i,t} + \varepsilon$ .... (3)

Where, $_i$ refers to the individual firms, and $_t$ refers to the time period of the leverage ratio. Summary of the hypotheses, illustration of the variables and expected sign of the explanatory variables are given in table 2 and 3:

Table 2: Illustration and Formulae of Dependent Variables

	Variables	Illustration	Formulae
Dependent Variables	LTD	Total Long term Debt Ratio	Total Long Term Debt / Total Asset
	STD	Short Term Debt Ratio	Short Term Debt/Total Asset
	TD	Total Debt Ratio	Total Debt / Total Asset

Table 3: Illustration of Independent Variables, Summary of Hypothesis and Expected Sign

	Variables	Illustration	Formulae	Expected Sign
Independent Variables	DSC	Debt Service Coverage	EBIT/Finance Expense	Positive
	LR	Liquidity Ratio	Current Ratio or Current Asset/Current Liability	Negative
	TR	Tangibility Ratio	Total Fixed Asset/ Total Asset	Positive
	PR	Profitability Ratio	Return on Equity	Negative
	GR	Growth Rate	$\{(TA\ t/TA\ t\text{-}1)\}\text{-}1$	Positive
	OL	Operating Leverage	EBIT/Operating Revenue	Negative
	FS	Firm Size	In (Total Operating Revenue)	Positive
	Age	Age of the Firm	Total Number of Years from Inception	Negative

6. Findings

Table four shows the results of equation one where LTDR (long term debt to total asset ratio) has been used to proxy leverage ratio. The regression results of equation two have been delineated in table five where STDR (short term debt to total asset ratio) has been used for leverage ratio. And, table six gives the outcomes of equation three where dependent variable TDR (total debt to total asset ratio) stands for gearing ratio. Liquidity ratio and firm size are significant at 5% level for all the three equation. Debt service ratio, growth rate and operating leverage each has been proved to be significant in two cases out of three equations. On the other hand, tangibility and profitability ratio have been proved to insignificant for all the three equations. Age is significant only for equation one.

Hypothesis one asserts that debt service ratio should be positively related to debt ratio. But the coefficients for debt service coverage for all the three ratios are negative. Besides, this ratio is statistically significant in case of long term and total debt ratio. But the result in case of short term debt ratio is not significant. Therefore, hypothesis one is acceptable when only long term and total debt ratios are considered. The negative relation of debt service capacity to the debt ratio means that the NBFIs of Bangladesh do not consider how much debt they can service before they take debt. In fact those firms that have low debt service capacity take more debt. This reveals inefficiency of the Bangladeshi NBFIs debt financing scenario. The results are not consistent with the results achieved by Chowdhury, MU 2004 and Lima, M 2009 studies.

Table 4: Cross-Sectional Time-Series FGLS Regression 1 (Long Term Debt Ratio to Explanatory Variables)

```
. xtglsltdrdsc - age, panels(hetero)

Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        heteroskedastic
Correlation:   no autocorrelation

Estimated covariances =  24          Number of Obs = 72
Estimated autocorrelations= 0        Number of groups = 24
Estimated Coefficients= 9            Time periods = 3
                                     Wald chi2 (8) = 81.12
                                     Prob>chi2 = 0
```

ltdr	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
dsc	-0.04029	0.009976	-4.04	0	-0.05984	-0.02074
lr	0.071023	0.023649	3	0.003	0.024672	0.117374
tr	0.668836	0.417049	1.6	0.109	-0.14856	1.486237
pr	0.168991	0.220339	0.77	0.443	-0.26286	0.600847
gr	0.057979	0.028829	2.01	0.044	0.001475	0.114482
ol	-0.03756	0.081577	-0.46	0.645	-0.19744	0.12233
fs	0.117115	0.023389	5.01	0	0.071274	0.162956
age	-0.01583	0.007189	-2.2	0.028	-0.02992	-0.00174
_cons	-0.70194	0.250445	-2.8	0.005	-1.1928	-0.21108

The results of liquidity ratio are statistically significant in all the three cases. So, there is enough evidence to accept the hypothesis. However, the coefficients show mixed results. The result matches with the hypothesis in case of short term debt ratio and total debt ratio that is liquidity is negatively related to debt. But it does not comply with hypothesis in case of long term debt ratio. Thus the NBFIs of Bangladesh take more long term debt if the liquidity is high. But they take less short term debt in case of high liquidity. Convenient theories suggest a negative relation should be expected between liquidity and leverage. Jong, AD, Kabir, R and Nguyen, TT 2008 found insignificant results for the relation between liquidity and leverage in case of India.

Table 5: Cross-Sectional Time-Series FGLS Regression 2 (Short Term Debt Ratio to Explanatory Variables)

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. xtglsstdrdsc - age, panels(hetero)

Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        heteroskedastic
Correlation:   no autocorrelation

Estimated covariances =  24        Number of Obs = 72
Estimated autocorrelations= 0      Number of groups = 24
Estimated Coefficients= 9          Time periods = 3
                                   Wald chi2 (8) = 156.7
                                   Prob>chi2 = 0
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stdr	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
dsc	-0.02996	0.025448	-1.18	0.239	-0.07983	0.019918
lr	-0.51869	0.078211	-6.63	0	-0.67198	-0.3654
tr	-1.61022	1.08527	-1.48	0.138	-3.73731	0.516875
pr	-0.4073	0.657354	-0.62	0.536	-1.69569	0.881085
gr	0.068529	0.089222	0.77	0.442	-0.10634	0.243401
ol	-0.76568	0.249542	-3.07	0.002	-1.25477	-0.27658
fs	0.217032	0.08263	2.63	0.009	0.055082	0.378983
age	-0.00983	0.022874	-0.43	0.667	-0.05466	0.035002
_cons	-0.67309	0.890402	-0.76	0.45	-2.41825	1.072063

Tangibility ratio also shows a mixed result though insignificant in all the three cases of long term debt ratio, short term debt ratio and total debt ratio. The hypothesis expects a positive relation between tangibility and debt ratio. The tangibility coefficient shows a positive relation with the long term debt ratio as stated in hypothesis 3. It can be seen that firms with more fixed asset have more long term debt. However tangibility coefficient shows a negative insignificant relation with the short term debt ratio and total debt ratio as opposed to the hypothesis 3. Thus, it is very difficult to explain the results regarding the variable tangibility ratio. NBFIs in Bangladesh take few short term debts when they possess much fixed assets to secure debt. Sayeed, MA 2011 and Lima, M2009 found a positive relation between these two ratios.

Profitability ratio is insignificant in all the three cases of long term debt ratio, short term debt ratio. And also does not comply with the hypothesis that profitability has a negative

relation with debt ratio in case of long term and total debt ratio. However profitability has a negative relation to short term debt complying with hypothesis four though the result is statistically insignificant. Therefore, we do not find enough evidence to accept hypothesis four. Pecking order theory suggests a negative relation between profitability and debt ratio. Our result shows that profitable NBFIs in Bangladesh have better access to debt finance and they utilize it. Rajan, RG and Zingales, L 1995 argue that creditors prefer to give loans to firms with high cash flow. The proxy used is cash operating profit (profit before interest, depreciation, taxes, and amortization) adjusted for non-recurring income and non-operating income scaled down by assets. However, Bevan, AA and Danbolt, J 1999 found a negative relation between profitability and debt ratio in case of companies in UK.

Hypothesis five insists that growth ratio should have a positive ration with the debt ratio. [3]According to the pecking order theory growth rate should be positively related to leverage ratio since higher growth implies a higher demand for funds and, a greater reliance on external financing through the preferred source of debt. In our study, growth rate is a significant coefficient for equation one and three and it complies with the hypothesis five. It is insignificant for short term debt ratio though the sign of the coefficient conforms to the hypothesis five. Thus, we found enough evidence to accept hypothesis five when long term and total debt ratio are considered to be the leverage ratio. However, this is against agency theory and trade off theory. We expected that firms with higher growth opportunities prefer to avail to debt finances of all types such as; long term debt ratio, short term debt ratio and total debt ratio. Thus growth rate is positively related to the debt ratio in our study. Lima, M 2009 also found a positive relation between growth rate and debt ratio for the pharmaceuticals companies in Bangladesh.

Operating leverage should have a negative impact on debt ratio according to hypothesis six. In this study, operative leverage is insignificant in case of long term debt ratio but significant in case of short term debt ratio and total debt ratio. Therefore, hypothesis six is accepted when short term and total debt ratio are considered to be the leverage ratio. However the coefficients in all the cases are consistent with the hypothesis six that operating leverage is negatively related to the debt ratio. It means NBFIs in Bangladesh, which have higher fixed cost in their operations, go for less debt. According to agency cost, trade off and pecking order theory, firms will have lower debt ratio if the operating leverage is high. Our finding conforms to the finding of Baral, KJ 1996 but contradicts with the result of Chowdhury, MU 2004 and Lima, M 2009.

Table 6: Cross-Sectional Time-Series FGLS Regression 3 (Total Debt Ratio to Explanatory Variables)

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. xtglstdrdsc - age, panels(hetero)

Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        heteroskedastic
Correlation:   no autocorrelation

Estimated covariances =  24          Number of Obs = 72
Estimated autocorrelations= 0        Number of groups = 24
Estimated Coefficients= 9            Time periods = 3
                                     Wald chi2 (8) = 254.63
                                     Prob>chi2 = 0
```

tdr	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
dsc	-0.08562	0.021009	-4.08	0	-0.1268	-0.04445
lr	-0.50896	0.06153	-8.27	0	-0.62955	-0.38836
tr	-1.49879	0.905208	-1.66	0.098	-3.27297	0.27538
pr	0.30662	0.514419	0.6	0.551	-0.70162	1.314862
gr	0.16163	0.07277	2.22	0.026	0.019004	0.304257
ol	-0.88042	0.197594	-4.46	0	-1.2677	-0.49314
fs	0.287048	0.069343	4.14	0	0.15114	0.422957
age	-0.0139	0.019006	-0.73	0.464	-0.05115	0.023349
_cons	-0.76257	0.742119	-1.03	0.304	-2.2171	0.691956

Hypothesis seven states that firm size should be positively related to debt ratio. The coefficients of Firm Size are statistically significant in all the three cases of our study. Besides, positive relation between firm size and debt ratio in all the three equations conforms to our hypothesis seven. Therefore, we found enough evidence to accept the hypothesis seven. It can be seen that larger NBFIs in Bangladesh have more debt in their capital structure. Considering the fact that larger firms are extensively diversified usually, and have more consistent cash flows, they can afford higher levels of leverage. This result is consistent with the study of Sayeed, MA 2011.

Age of the firm should be negatively related to debt ratio according to hypothesis eight. Age is statistically significant in case of long term debt ratio but not in case of short term debt ratio and total debt ratio. Therefore, hypothesis eight is accepted if only long term debt ratio is considered to be the measurement of leverage. However, the positive coefficients in all the three cases conform to our hypothesis eight. Thus, the more the

firm matures the less it takes debt. The matured firm becomes more reliable on its own fund. So debt ratio goes down as the age goes up. However the study of Sayeed, MA 2011 does not conform to our study.

7. Conclusion

This study reveals the financing decision of Non-Bank Financial Institutions of Bangladesh. It explains the observed variation in capital structure using FGLS regression model. Eight factors namely debt service coverage, liquidity ratio, tangibility ratio, profitability ratio, growth rate, operating leverage, firm size and age of the firm are identified and their relations to the debt ratio are studied. Most of the results are consistent with the previous results except debt service coverage and profitability ratio. We find that all the leverage ratios increase with the increase in growth rate and firm size. In contrast we found that debt service coverage, operating leverage and age are negatively related to all of the three debt ratios. However, we find mixed results in case of profitability, liquidity and tangibility ratios. Long term debt ratio increases with the increase in liquidity and tangibility ratios, whereas short term and total debt ratio decreases with the increase in liquidity and tangibility ratios.

This study distinguishes itself from the previous papers with the introduction of key variables that have not been studied previously in papers related to Bangladeshi Non Bank Financial Institutions such as firm size, age and liquidity ratio. The study uses cross sectional time series panel data which has not been previously used in this area. FGLS regression with no autocorrelation is used that automatically corrects the heteroscedasticity lying among the data. Lima, M 2009 used only the cross sectional data due to limitations of collecting data while setting up her benchmark model in further research in this field. This study builds on previous studies and sets itself as a compliment to previous benchmark papers, for future research in determining factors for Non-Bank Financial Institutions. The study is a major contribution to the capital structure literature due to its large number of observations in comparison to previous studies and the use of stronger proxies.

However this study is not beyond limitations. To conduct an assessment on leverage scenario of the NBFIs, we need data collected through independent survey. However, we've used data which were collected by Bangladesh Bank as part of its internal survey in 2006-2008. Again the study scope is not wide enough to cover overall performance of the NBFI. It focused mainly on capital structure determinant i.e., the debt ratio.

For future research, we plan to study several macro-economic factors that influence capital structure decisions. This will include factors such as Capital Formation, Stock Market Development, Financial Stability of Country, Corporate Tax, Terrorism Threat, Direct Foreign investment, etc. Researchers with the longer timeline data sets can develop a stronger model by including additional firm specific factors like Uniqueness factor (uniqueness of product), Collateral Value Factor, Carry Forwards, Discount Rates, Quality Spreads, etc. Although these factors are not the core factors in financial structure decisions, they have been shown to have effects in previous studies of

developed economies. Researchers can utilize this study to develop stronger models for research into the capital structure determinants for emerging economies.

Endnotes

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[1] Adopted from http://economics.about.com/library/glossary/bldef-fgls.htm
[2,3]Adopted from Sapar, NR and Lukose, J 2002, "An Empirical Study on the Determinants of the Capital Structure of Listed Indian Firms".*Social Science and Research Network*, viewed 30 August 2010, <http://ssrn.com/abstract=433120 or doi:10.2139/ssrn.433120>.

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