



DOES CAPITAL STRUCTURE AFFECT THE PROFITABILITY OF LISTED FAMILY AND NON-FAMILY FIRMS? EVIDENCE FROM BANGLADESH

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ABSTRACT

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The aim of this study is to examine the impact of capital structure on firm performance. The proxy variables of capital structure are short-term debt ratio, long-term debt ratio and total debt ratio where firm performance is measured by return on assets (ROA) of Dhaka Stock Exchange (DSE) listed 39 family firms and 39 non-family firms. Based on a paired match sample selection procedure, 390 firm-years covering the period of 2013 to 2017 are used as the final sample of this study. By extrapolating from the Pooled Ordinary Least Square (OLS) regressions results, it is found that leverage ratios are significantly and negatively associated with the firm's profitability. It is also found that family firms are highly influenced by debt financing than non-family firms. Finally, this study disagrees with the trade-off theory but agrees with the pecking order theory that profitable firms depend more on equity than debt as their key financing option in Bangladesh.

Contribution/Originality: This study contributes to the existing literature by identifying to what extent – and if – the firm performance of Bangladeshi listed family and non-family firms are influenced by capital structure between 2013 and 2017.

1. INTRODUCTION

Leverage, also known as debt financing is an issue of capital structure. Azhagaiah and Gavoury (2011) stated that a firm formulates its capital structure through a combination of debt and equity which is used to finance its whole operations. There are many alternatives available like short-term debt, long-term debt, common equity, preferred equity and retained earnings and firms have their own choices or policies whether to employ a large portion of debt financing or a small amount of debt financing. The concept of capital structure is significant to the stakeholders of a firm like shareholders, lenders, investors, regulators, financial experts, analysts and other entities who use the financial information. It is important due to the decision on capital structure is likely to affect firm performance (Gill, Biger, Pai, & Bhutani, 2009; Shubita & Alsawalhah, 2012). Additionally, the capital structure also helps the management to get the necessary information on how strategic decision enhances the firm value. A firm wants to maintain its sustainability is likely to focus on its internal financing than external financing (Ting & Lean, 2011). A firm will go for secured debt than risky debt if it is inescapable for it to be levered and it will use equity

financing in its capital structure from the issuance of common stocks as a last resort (Abor, 2005; Hamid, Abdullah, & Kamaruzzaman, 2015; Shubita & Alsawalhah, 2012). Another important factor of debt financing is tax systems which affect the firm's decision on capital structure (Azhagaiah & Gavoury, 2011). If the debt is not tax-deductible, in that situation a firm will be in an indifferent point to use debt or equity financing to run its business operations. A firm in an economic system where debt is not tax-deductible will not prefer debt financing to form its capital structure due to the absence of tax advantages of debt. On the contrary, a firm will try to increase its market value by including more debts in its capital structure when it enjoys an economic system where the interest on debt financing is tax-deductible. The reason to be more levered is the tax advantage of debt financing. But a higher portion of the debt on capital structure related to higher costs that can lead a firm to be risky (Hamid et al., 2015; Nadaraja, Zulkafli, & Masron, 2011) and thus to be bankrupt. Therefore, a firm should make an optimal capital structure where the costs and benefits associated with it will be in a balanced condition. A firm will try to depend on more debt to get the tax advantage when it is allowed but the firm might fall when the income is insufficient to cover the interest charges on debt when the economy faces a recession. Therefore, too much dependency on the debt will escalate the bankruptcy risk. Financial scholars traditionally agreed that increasing the percentage of debt in the capital structure will lead an increase in the firm value up to a level, but beyond that level, further enhancement of debt will lead an increase in the firm's overall cost of capital and thus reduce its overall market value.

Financial leverage generates not only tax advantages for the firms but also default risk for the lenders like bankers, credit unions and other private lenders. So the issue of capital structure is a concern to be investigated. Though several studies have been done on this issue in developed countries, there is a paucity of study on this topic in Bangladesh context. To date, some studies tried to investigate the relationship between capital structure and profitability but no study has been done on this issue by considering family and non-family firms in Bangladesh. This is the area which is covered by this study along with the latest data from the year 2013-2017 in a row. It is worthy enough to understand that how firms select their capital structure by analyzing the association of capital structure with profitability and identify the key factors of capital structure that might have an influence on the firm's profitability. This is because future survivability of a firm mostly relies on its profit generation ability and getting well informed about the optimum capital structure. Thus, this paper attempts to explore the impact of capital structure on profitability of family and non-family firms in Bangladesh.

The rest of the paper is structured as follows: next section reviews the literature on capital structure and profitability along with the Bangladesh context; section 3 describes the methodology used in this study; section 4 documents the empirical results, followed by a section 5 reports robustness check of the results; finally, the last section concludes the paper on research findings along with its contributions and limitations.

2. LITERATURE REVIEW

2.1. Theoretical Framework

After a lot of efforts by researchers and academicians for many years, the study of capital structure is propelled and framed by the original theory "irrelevance theory of capital structure" in capital structure developed by Modigliani and Miller (1958) hereafter known as MM theory. Depending on some assumptions like the existence of a perfect capital market, homogenous expectation, absence of tax rates and transaction costs MM theory deduced that a firm's market value is not affected by leverage. These unrealistic assumptions don't seem to match with real life and the theory is criticized and called as an irrelevance theory of capital structure. In 1963, Modigliani and Miller (1963) incorporated the presence of tax rates in their theory which led firms to include more debt in the capital structure with a view to maximizing the value of the firms. Miller advanced capital structure theory by incorporating three types of tax rates in 1977 which are corporate tax rate, tax rate to apply on dividends and tax

rate to impose on income from interests. Thus, it is argued by Miller (1977) that the value of the firms relies on the proportionate level of each distinguished tax rate.

Later, other theories that have been developed to describe the capital structure, are trade-off theory and pecking order theory. It is recommended by the researchers that optimal capital structure exists that seems to enhance a firm's value and at the same time lessen the cost of the capital thus leading to a balanced point between risk and return. However, it is yet to be agreed to a precise methodology that can help the financial managers to determine the perfect capital structure (Gitman & Zutter, 2010). Miller (1977) argued that a profitable firm prefers debt to equity financing and tries to improve its profits (Ahmad & Rahim, 2013) which is supported by the definition of trade-off theory. This theory intimates that firms are inclined to trade off the benefits and costs associated with debt and equity and arrive at a perfect capital structure being a part of market imperfections like taxes, bankruptcy costs and agency costs. An optimal capital structure should be determined after balancing the aspects of both cost and benefits. Firms are ready to incorporate debt financing in their capital structure until they surpass the balance of tax benefits of debts against the costs of financial distress when the interest on the debt is tax-deductible. However, debt financing is associated with default risk and leads a firm to be bankrupt due to the lack of assessing the two aspects of costs and benefits in order to determine a perfect capital structure.

Pecking order theory which opposed the concept of trade-off theory was developed by Myers and Majluf (1984) to explain the capital structure with new insights. According to the pecking order theory, a profitable firm depends less on debt to form its capital structure (Ting & Lean, 2011). It is argued in the theory that a firm uses a hierarchy of financial choices that begin with retained earnings, then debt financing and finally equity will be used as the last source of financing process (Nadaraja et al., 2011). Above all, a firm depending on debt financing indicates that it's not a profitable firm leading an adverse effect on its stock price. Information asymmetries are influenced by this kind of event where the managers keep more information about the firms. New shares will be issued to raise equity finance by the managers when they believe that the price of the stock is fairly or overly valued than the actual price of the stock. Even the information asymmetries are likely to occur when external financing warns that a firm is facing lower profitability that leads the stock to be affected. Managers will again issue new shares when they will realize that the price of the stock of the firm is in their favor. This may be wrongly described as the firm really is not profitable and dependent on debt financing. So, a firm should use debt financing first rather than new stock issuance to specify the good reputation of the firm and this practice allows a firm to have a large cash reserve (Seifert & Gonenc, 2008). Additionally, there is a close relationship between pecking order theory and family firms (Jorissen, Laveren, Martens, & Reheul, 2002) where internal financing is mostly preferred by the owner of the firms in order to keep the share ownership within the family and external financing is unlikely to prefer.

So, trade-off theory and pecking order theory are the theoretical frameworks of this study that will best describe the findings of whether profitable firms depend more on debt financing or equity financing.

2.2. Profitability

Profitability is also referred to as firm performance that helps a firm's market value to increase and most used proxies to estimate a firm's profitability are return on assets (ROA) and return on equity (ROE) (Demsetz & Lehn, 1985; Mehran, 1995). Understanding the concept and extent of profitability is important as it is directly associated with capital structure. Several studies have been conducted on this issue to understand; to what range decision on capital structure affects a firm's profitability and in which direction. The evidence on the impact of capital structure on profitability provides mixed information. The positive impact of debt financing on a firm's profitability was found in the studies of Amran and Ahmad (2011); Ting and Lean (2011). However, some studies (Hamid et al., 2015) agreed on pecking order theory which states that there is a significant negative association of debt financing with firm performance. Inclusion of debt financing in the capital structure of a profitable firm to generate further profits would be subject to conditions of the lenders. Consequently, there will be a negative relationship between

debt financing and profitability (Nadaraja et al., 2011). In Asia, firms with family control are very common and popular where family members dominate the overall activities of the firms. Ownership and composition of family-based firms are also investigated by Anderson and Reeb (2003); Shyu (2011). The role of family control on firm performance is also documented in a mixed result. It is found in the study of Jorissen et al. (2002) that firms with family control are more effective than firms without family control to enhance both accounting and market-based profitability and also family firms hold a long-term perception in investments and thus generate better earnings. Moreover, agency problems may be reduced at a great deal in a firm with family control as the interests of both owners and firms are congruent. For that reason, the lenders get motivated to invest more in family firms and thus family firms have a greater incentive to include more debts as a financing source in their capital structure. The same result is also found in the study of Anderson and Reeb (2003) as family firms reduce the magnitude of the conflict between principal and agent as well as the information asymmetries. On the other hand, Khan and Siddiqua (2015) found that there is a negative relationship between family control and firm performance in Bangladesh.

2.3. Capital Structure

The capital structure of a firm is defined as the combination of debt and equity financing at different measures that helps a firm's whole operations to run (Azhagaiah & Gavoury, 2011; Hamid et al., 2015). To date, different measures of capital structure have been used by the researchers. Abor (2005) used total debt ratio measured by total debt to total assets as a proxy of the capital structure while long-term debt ratio measured by long-term debt to total assets is used in the study of Anderson and Reeb (2004). But using a single proxy of the capital structure may lead the results to be biased and faulty (Shubita & Alsawalhah, 2012). Therefore, it would be a wise decision to use multiple proxies instead of a single proxy of capital structure. Thus, a combination of short-term debt to total assets, long-term debt to total assets and total debt to total assets are used as the measurements of capital structure in the studies of Hasan, Ahsan, Rahaman, and Alam (2014) and Hamid et al. (2015). Two proxies of capital structure namely short-term debt to total assets and long-term debt to total assets are used in the study of Amin and Jamil (2015). So, a different combination of proxies of capital structure is evident in the literature. Consistent with Hamid et al. (2015), three proxies of capital structure like short-term debt to total assets, long-term debt to total assets and total debt to total assets have been used in this study to investigate the relationship between capital structure and profitability.

2.4. Bangladesh Perspective

Chowdhury and Chowdhury (2010) argued that a firm's capital structure should include an optimum level of debt and equity as it helps to enhance the firm's value but the cost of capital should also be considered due to its negative impact on firm's value. Another empirical study by Hasan et al. (2014) found that there is a significant positive relationship between firm performance proxy EPS and short-term debt ratio while the relationship between long-term debt ratio and EPS is negatively significant. It is also found that Tobin's Q and ROE are not significantly related to capital structure. But the impact of capital structure on ROA is significant and negative. At the end of the paper, the authors finally agreed on the pecking order theory. The impact of capital structure and firm performance is also explored in the study of Amin and Jamil (2015) where two measures of firm performance namely ROA and ROE and two proxies of capital structure namely short-term debt ratio and long-term debt ratio are used. The results showed that short-term debt ratio is positively and significantly associated with both of the firm performance measures. It implies that short-term debt financing helps a firm to generate higher profit. But the results also documented the negative association of long-term debt with ROA. The authors concluded that long-term debts are likely to impose heavy terms and conditions and costly to finance in Bangladesh. The negative relationship between firm performance and leverage ratios is also recorded in the study of Rouf (2015). Another empirical study in Bangladesh done by Meah (2019) found that larger corporate boards, larger audit committees,

and foreign investors reduce the flow of debt in firms and make firms less risky. Moreover, that study also revealed that director ownership and independent auditors prefer a firm to be levered and risky while the non-monitoring role of female directors on leverage is also documented.

2.5. Control Variables

Moderating variables are included in the research models to control systematic variations. It is argued by most of the authors that the observed differences between family and non-family companies in empirical studies are not caused by the family characteristics rather demographic features like firm size, firm age, industry types and geographical location (Jorissen et al., 2002). Different demographic characteristics like firm size, firm age, sales growth, industry types and so on can manipulate the characteristics of multivariate studies investigating the impact of capital structure on a firm's profitability. Hamid et al. (2015) used 3 control variables namely firm size, sales growth and industry types where Jorissen et al. (2002) used firm size and industry types. Consistent with Hamid et al. (2015), the systematic variations are monitored in this paper by using the firm size and sales growth of the firm. Firm size has mixed evidence in association with leverage. A positive association between firm size and leverage ratios is documented in the study of Gill and Mathur (2011). In reverse, Ting and Lean (2011) found a negative relationship between firm size and capital structure where Gill et al. (2009) didn't find any significant association between firm size and leverage.

Sales growth is another factor in the capital structure. Nadaraja et al. (2011) argued that the sales growth of a firm is one of the firm factors, which consistently and significantly goes with capital structure theories. There are several measurements of sales growth used by the researchers. This study measures the sales growth according to Hamid et al. (2015) where sales growth is estimated as current year sales minus previous year sales scaled by previous year sales. It is found that profitability increases when a firm has greater sales growth (Hamid et al., 2015). However, the negative role of sales growth on firm performance is also found in the study of Gill, Biger, and Mathur (2011). It is also found that there is no significant relationship between sales growth and the capital structure of a firm as sales growth is not a significant factor of the capital structure (Gill et al., 2009).

2.6. Hypothesis Development

The aim of this paper is to examine the impact of capital structure on firm performance of family and non-family firms in Bangladesh due to the exiguity of the studies on this specific area. Gill et al. (2009) found that debt financing is negatively related to the firm's profitability where firms with higher profits utilize less debt than firms with lower profits. Shubita and Alsawalhah (2012) also found the same result in the Jordanian context. However, a positive association of leverage with firm's profitability is documented in the study of Abor (2005). Hamid et al. (2015) found a significant negative relationship between leverages and profitability of family and non-family firms in Malaysia. Amran and Ahmad (2011) claimed that capital structure helps family firms to enjoy better firm performance to be more exact by using debt financing. Hence, higher debt in the capital structure of family firms signals an investment opportunity for it as this may expand the extent of family firms to multi-corporations (Anderson & Reeb, 2003). Jorissen et al. (2002) stated that family firms are likely to use more debt financing, thus enjoy better capital structure than non-family firms (Abdellatif, Amann, & Jaussaud, 2010). Consistent with Hamid et al. (2015), this study proposes the following hypotheses to investigate the relationship between capital structure and profitability of family and non-family firms in Bangladesh:

H1: Short-term debt ratio is related to profitability.

H2: Long-term debt ratio is related to profitability.

H3: Total debt ratio is related to profitability.

3. METHODOLOGY

3.1. Sample and Data Collection

The sample selection process is documented in Table 1 & 2. This paper uses sample restricted to firms listed in the Dhaka Stock Exchange from 2013 to 2017 in a row. This study initially starts with 110 firms but some companies have changed their accounting period from January-December to July-June, have different accounting years, have insufficient data and incomplete annual reports are excluded from the sample. There are 92 firms having all the necessary information among which 44 are family firms and 48 are non-family firms. Finally, this paper is ended up with a random selection of 78 firms from those 92 firms. This study uses a paired match sample selection procedure which consists of 39 family firms and 39 non-family firms from eight sectors listed in the DSE to make the results comparable. Therefore, the same number of firms is considered for family firms and non-family firms from eight sectors to control important characteristics like the sales growth of the firm and firm size (Amin & Jamil, 2015; Hamid et al., 2015). The eight sectors are ceramics, food, power and fuel, pharmaceuticals, textiles, engineering, cement, and leather. The data to identify the family firms and non-family firms are collected from the respective companies' non-financial information of the annual reports while the financial data are procured from the financial statements of the annual reports.

Table-1. Sample description.

Sample size	
Number of firms	110
Less:	
Companies have changed accounting year	5
Companies have different accounting year	8
Companies without necessary information	5
Total firms with necessary information	92
Family firms	44
Non-family firms	48
Final sample firms (Family + Non-family)	78

Table-2. Industry distribution.

Industry Types	Firm Types	Sample Firms	Observed Firms	Percentage
Ceramics	FF	1	5	40%
	Non-FF	1		
Food	FF	5	17	47%
	Non-FF	5		
Fuel & Power	FF	3	19	21%
	Non-FF	3		
Pharmaceuticals	FF	7	30	13%
	Non-FF	7		
Textiles	FF	10	52	31%
	Non-FF	10		
Engineering	FF	8	36	17%
	Non-FF	8		
Cement	FF	3	7	85%
	Non-FF	3		
Leather	FF	2	6	67%
	Non-FF	2		
Total (5 years duration)		78	172	45%

3.2. Data Analysis Methods

In this study, the Pooled OLS multivariate regression model is used to test the hypotheses. The descriptive statistics are estimated for mean, minimum and maximum values of every variable to describe the firm performance proxies, leverage ratios, and firm characteristics of family and non-family firms in detail. This paper also interpolates the partial correlation matrix to spot the individual relationship between variables. Additionally, this

paper uses the Variance Inflation Factor (VIF) to check the presence of multicollinearity problems and the Breusch-Pagan test to address the existence of the heteroskedasticity problem. Each multivariate model is run individually for family and non-family firms by considering the White (1980) consistent-error adjustment to resolve the heteroskedasticity problem. Finally, this examination employs two additional analyses which are the Pooled OLS regression considering year dummy and the Pooled OLS regression considering lagged independent variable model to check the robustness of the results.

3.3. Research Models

Consistent with Hamid et al. (2015); Hasan et al. (2014) this study employs following general multivariate models to test the research hypotheses:

$$ROA_{it} = \beta_0 + \beta_1 STDTA_{it} + \beta_2 LNSIZE_{it} + \beta_3 GROWTH_{it} + \varepsilon_{it} \quad (1)$$

$$ROA_{it} = Z_0 + Z_1 LTDTA_{it} + Z_2 LNSIZE_{it} + Z_3 GROWTH_{it} + \varepsilon_{it} \quad (2)$$

$$ROA_{it} = \lambda_0 + \lambda_1 TDTA_{it} + \lambda_2 LNSIZE_{it} + \lambda_3 GROWTH_{it} + \varepsilon_{it} \quad (3)$$

Where, β , Z , λ represent the intercepts of the equations; ε is the random error term; i represents the firms and t represents the periods, 2013, 2014, 2015, 2016 and 2017. Following Table 3 documents the summary of the variables used in this paper:

Table-3. Definition and measurement of the variables.

Variables	Abbreviation	Full name	Measurement	Reference
Dependent Variable-Firm Performance	ROA	Return on assets	Net income/Total Assets	Hamid et al. (2014); Rahman, Meah, and Chaudhory (2019); Meah. and Chaudhory (2019)
Independent Variables-Capital Structure	STDTA	Short-term debt to total assets	Short-term debt/Total assets	Hamid et al. (2015)
	LTDTA	Long-term debt to total assets	Long-term debt/Total assets	Hamid et al. (2015)
	TDTA	Total debt to total assets	Total debt/Total assets	Hamid et al. (2015)
Control Variables-Firm Characteristics	LNSIZE	Firm size	Natural logarithm form of total sales	Hamid et al. (2015)
	GROWTH	Sales growth	Current year sales minus previous year sales and scaled by previous year sales	Hamid et al. (2015); Meah. and Chaudhory (2019)

4. EMPIRICAL RESULTS AND ANALYSIS

4.1. Descriptive Statistics

Table 4 represents the descriptive statistics of mean, minimum and maximum values of dependent variable ROA for family and non-family firms and the amount of data are 390 firm-years for a period of 2013 to 2017 in a row. It is shown in the table that the average ROAs for family firms and non-family firms in Bangladesh are 10.91 percent and 9.82 percent respectively. It implies that the mean of the ROA for family firms is above from the non-family firms in Bangladesh. This finding is in line with the finding of Hamid et al. (2015) where family firms have higher profitability than non-family firms. Dependent variable ROA ranges from a minimum of -23.64 percent to a maximum of 66.79 percent for family firms where it ranges from a minimum of -0.91 percent to a maximum of 27.09 percent for non-family firms in Bangladesh. It is clear in the table that the range of minimum and maximum scores for firm performance is higher for family firms compared to non-family firms and the same result is also found in the study of Hamid et al. (2015). This higher range of ROA for family firms can be interpreted as they are more effective in utilizing the assets and thus to generate their profits compared to non-family firms. Therefore, it can be

concluded from the result that family firms are using their assets to generate earnings in a more effective way than non-family firms in Bangladesh.

Table-4. Descriptive statistics of ROA.

Firm Type	N	Mean	Minimum	Maximum
Family	39	0.1091	-0.2364	0.6679
Non-Family	39	0.0982	-0.0091	0.2709

Table 5 documents the mean, minimum and maximum scores for independent variables STDTA, LTDTA and TDTA of family and non-family firms in Bangladesh. According to the values for independent variables in Table 5, the mean scores for STDTA and TDTA in family firms are somewhat higher than that of non-family firms while non-family firms have on an average slightly higher LTDTA than family firms in Bangladesh. The average scores are 18.03 percent for STDTA, 6.21 percent for LTDTA and 24.24 percent for TDTA in family firms while 15.02 percent for STDTA, 7.61 percent for LTDTA and 22.62 percent for TDTA in non-family firms. Both family and non-family firms depend on more STDTA than LTDTA as TDTA includes higher STDTA than LTDTA. This finding is consistent with the finding of Hamid et al. (2015). The possible reason to depend on more short-term debt financing than long-term debt financing is the difficulty in accessing long-term credits from banks (Shubita & Alsawalhah, 2012). Another possible reason is that the higher cost of capital associated with long-term debt motivates firms to depend less on long-term debt financing in Bangladesh. In summary, non-family firms have lower scores for all categories than family firms except for the mean value for LTDTA. Family firms include moderately lower LTDTA than non-family firms to finance their capital structure and the minimum scores of leverage are zero for both types of firms.

Table-5. Descriptive statistics of leverage.

Independent Variables	Mean		Minimum		Maximum	
	FF	Non-FF	FF	Non-FF	FF	Non-FF
STDTA	0.1803	0.1502	0	0	1.3955	1.4303
LTDTA	0.0621	0.0761	0	0	0.4037	0.5817
TDTA	0.2424	0.2262	0	0	1.5479	2.0120

Table 6 illustrates the results of descriptive measures regarding the control variables used in this paper. The table reveals mean, minimum and maximum of the observed values for firm size and growth. The table shows that the mean size for family firms is 7.44 (worth of Bangladeshi Taka 8100 million) ranging from 0 to 10.77 and it is 7.79 (worth of Bangladeshi Taka 8400 million) ranging from 4.58 to 11.95 for non-family firms. The average firm size for non-family firms is higher than that of family firms in Bangladesh. Alternatively, the table represents that the average growth for family firms is higher than that of non-family firms in Bangladesh. Even the range of sales growth for family firms (-100 percent to 414.55 percent) is higher than that of non-family firms (-61.56 percent to 123.99 percent). It means that family firms are more successful to grow in terms of sales than non-family firms in Bangladesh.

Table-6. Descriptive statistics of firm characteristics.

Control Variables	Mean		Minimum		Maximum	
	FF	Non-FF	FF	Non-FF	FF	Non-FF
LNSIZE	7.4405	7.7890	0	4.5850	10.7720	11.9494
Growth	0.1111	0.0872	-1.00	-0.6156	4.1455	1.2399

4.2. Correlation Matrix

Table 7 represents the Pearson correlation matrix between dependent and independent variables used in this study. The correlation matrix of relevant variables for family firms is depicted in the upper matrix and the lower

matrix delineates the correlation matrix of relevant variables for non-family firms. It is found in the table that all types of leverage ratios are negatively associated with firm performance proxy ROA for both family and non-family firms. Non-family firms have a stronger correlation with ROA than family firms in terms of STDTA, LTDTA and TDTA as the coefficients are higher (-0.3410 for STDTA, -0.4537 for LTDTA and -0.4518 for TDTA) than that of family firms. The positive correlation between ROA and control variables is also documented in the table for both types of firms.

Table-7. Pearson correlation matrix.

Variables	ROA	STDTA	LTDTA	TDTA	LNSIZE	GROWTH
ROA	1	-0.1484**	-0.1238*	-0.1907***	0.3348***	0.3401***
STDTA	-0.3410***	1	-0.0594	0.9060***	-0.0366	0.0865
LTDTA	-0.4537***	0.3871***	1	0.3688***	0.1092	0.0763
TDTA	-0.4518***	0.9171***	0.7225***	1	0.0122	0.1128
LNSIZE	0.3167***	-0.2176***	-0.2514***	-0.2718***	1	0.1573**
Growth	0.0658	-0.0360	-0.0358	-0.0425	0.0564	1

Note: ***1% significance level, **5% significance level, *10% significance level

4.3. Multivariate Analysis

Table 8 reports the results of the multivariate regressions of explanatory variables on firm performance. The first column discloses the relevant variables used in this study. The table represents the regression results of 3 models applied to this paper to test the hypotheses. The outcome of the Variance Inflation Factor (VIF) test is documented in the last row of the following Table 8. It is evident that the multicollinearity problem doesn't exist among the independent variables as mean VIF value for all regressions falls under the threshold of VIF values of 10 Hair, Black, Babin, Anderson, and Tatham (2006). It is also shown in the table that all the F-test values are statistically significant in all regressions results.

In the following Table 8, it is represented that the regression model 1 has an R square of 22.38 percent for family firms while it is 17.97 percent for non-family firms. The R² for STDTA to affect firm performance is higher for family firms than non-family firms and the result is consistent with Hamid et al. (2015). Table 8 reveals that STDTA is significantly and negatively associated with firm performance proxy ROA which supports our Hypothesis expressed in H1. The empirical result shows that for each one percent increases in short-term debt financing in the family firms, the firm's profitability ROA decreases by on an average 4.40 percent in family firms. Whilst, the decrease in non-family firms is higher than family firms, which is 10.67 percent. Therefore, it can be concluded that the short-term debt financing in non-family firms has a higher negative impact on firm performance than that of family firms by remaining the other variables constant and the same result is also documented in the study of Hamid et al. (2015). The significant negative relationship between short-term debt ratio and firm performance proxy ROA is also found in the study of Hasan et al. (2014) in Bangladesh. It is also illustrated in regression model 1 that there is a positive impact of growth on firm performance in family firms which is significant at 1percent level. The same result is also documented in the work of Hamid et al. (2015). Similarly, the profitability of both family and non-family firms is positively and significantly affected by firm size in Bangladesh. It means that large firms are doing better to increase the firm's profitability in Bangladesh. In summary, all the control variables have a positive impact on firm performance but at least one moderating variable has a significant positive impact on firm performance for both types of firms.

In line with the model 1, the regression result of model 2 implies that there is a significant negative impact of long-term debt financing on firm's profitability in Bangladesh. The coefficients (-0.1057 for family firms and -0.2591 for non-family firms) are negative for both types of firms and they are statistically significant in the Bangladesh context. Therefore, H2 is also accepted. In Bangladesh, the same significant negative relationship between firm performance proxy ROA and long-term debt financing is also recorded in the studies of Hasan et al. (2014) and Amin and Jamil (2015). Similar to STDTA, an increase in LTDTA in the capital structure is related to a decrease in

firm performance and it is higher in non-family firms than that of family firms. Furthermore, the moderating variables firm size and growth have an impact on profitability as same as model 1 but R square is greater for non-family firms compared to family firms in model 2.

Regression model 3 reveals that there is a significant negative relationship between TDTA and ROA for both types of firms. The result is in agreement with the result of Hasan et al. (2014) that TDTA ratio is negatively related to firm performance proxy ROA in Bangladesh. The coefficient for family firms is -0.0572 tells that a one percent increase in total debt financing results in a decrease of ROA by 5.72 percent while the decrease is higher in non-family firms which is by 11.07 percent. The negative impact of TDTA on firm performance is higher for non-family firms and it is consistent with Hamid et al. (2015). The finding is similar to the finding found in model 1 and model 2. Overall, the finding in model 3 implies that an additional increase in debt financing is related to a decrease in firm performance in Bangladesh. It means that a firm with higher debt financing has lower profitability. It is also evident that both family and non-family firms which include more equity in their capital structure enjoy the better firm performance. Therefore, Hypothesis 3 is also taken. In regression model 3, it is shown that both family and non-family firms have higher R square than model 1 and model 2. Similar to the result in model 2, family firms have lower R square than non-family firms in regression 3. The relationship between control variables and profitability in model 3 is also as same as model 1 and model 2.

Table-8. Regressions results.

	Model 1		Model 2		Model 3	
	Family Firms	Non-Family Firms	Family Firms	Non-Family Firms	Family Firms	Non-Family Firms
STDTA	-0.0440*** (0.0147)	-0.1067*** (0.0229)				
LTDTA			-0.1057*** (0.0288)	-0.2591*** (0.0337)		
TDTA					-0.0572*** (0.0149)	-0.1107*** (0.0253)
LNSIZE	0.0099*** (0.0031)	0.0116*** (0.0033)	0.0108*** (0.0031)	0.0099*** (0.0031)	0.0101*** (0.0031)	0.0096*** (0.0031)
GROWTH	0.0344*** (0.0098)	0.0126 (0.0176)	0.0339*** (0.0085)	0.0120 (0.0165)	0.0356*** (0.0097)	0.0114 (0.0185)
Constant	-0.0196 (0.0223)	-0.0056 (0.0331)	-0.0279 (0.0230)	0.0119 (0.0221)	-0.0157 (0.0222)	0.0197 (0.0227)
F-test	8.48***	9.96***	10.77***	21.23***	9.88***	9.31***
R ²	0.2238	0.1797	0.2289	0.2513	0.2492	0.2561
N	195	195	195	195	195	195
Mean VIF	1.02	1.04	1.03	1.05	1.03	1.06

Note: ***1% significance level, **5% significance level, *10% significance level, two tailed. Numbers in parenthesis denote the robust standard error

5. ROBUSTNESS CHECK

To check the robustness, all the variables used in 3 regression models are regressed by considering the year dummy and lagged independent variable model. The following Table 9 provides the results of the year dummy regression. From Table 9 it is observed that the findings are almost similar to the previous findings documented in Table 9. It means that there is no existence of the previous year's effect on the results. The findings reveal that there is a negative relationship between a firm's profitability and leverage ratios for both family and non-family firms.

As a part of the robustness check, lagged independent variables are also considered in the regression models. The results from the regressions considering lagged independent variables are incorporated in Table 10. Table 10 represents that there is no place for the endogeneity problem to exist in the research model as the results are consistent with the previous results reported in Table 8. The findings in Table 10 suggest that profitable firms are likely to depend more on equity as their leading financing option for both types of firms in Bangladesh.

We have also checked the robustness of the results by using two alternative firm performance proxies namely return on sales (ROS) and profit margin. Table 11 represents the regression results when ROS and profit margin are used as the dependent variables. The results are similar to the previous results reported in Table 8 except the insignificant negative association of LTDTA with firm performance proxies of family firms. This result signifies the consistency of the results found from the different statistical tools used in this study to test the hypotheses.

Table-9. Regressions results (Year dummy).

	Model 1		Model 2		Model 3	
	Family Firms	Non-Family Firms	Family Firms	Non-Family Firms	Family Firms	Non-Family Firms
STDTA	-0.0464*** (0.0142)	-0.1067*** (0.0229)				
LTDTA			-0.1041*** (0.0298)	-0.2590*** (0.0338)		
TDTA					-0.0588*** (0.0144)	-0.1108*** (0.0252)
LNSIZE	0.0098*** (0.0031)	0.0117*** (0.0033)	0.0107*** (0.0031)	0.0010*** (0.0031)	0.0100*** (0.0030)	0.0097*** (0.0031)
GROWTH	0.0371*** (0.0162)	0.0127 (0.0171)	0.0367*** (0.0082)	0.0124 (0.0159)	0.0383*** (0.0090)	0.0118 (0.0179)
Constant	-0.0199 (0.0234)	-0.0027 (0.0239)	-0.0279 (0.0115)	0.0151 (0.0233)	-0.0164 (0.0233)	0.0218 (0.0234)
F-test	4.65***	4.68***	6.09***	10.20***	5.67***	4.67***
R ²	0.2514	0.1847	0.2527	0.2559	0.2768	0.2510
N	195	195	195	195	195	195
Year Dummy	YES	YES	YES	YES	YES	YES

Note: ***1% significance level, **5% significance level, *10% significance level, two tailed. Numbers in parenthesis denote the robust standard error.

Table-10. Regressions results (Lag model).

	Model 1		Model 2		Model 3	
	Family Firms	Non-Family Firms	Family Firms	Non-Family Firms	Family Firms	Non-Family Firms
STDTA	-0.0460*** (0.0162)	-0.1060*** (0.0216)				
LTDTA			-0.0857*** (0.0329)	-0.2562*** (0.0357)		
TDTA					-0.0553*** (0.0171)	-0.1040*** (0.0240)
LNSIZE	0.0091*** (0.0036)	0.0111*** (0.0038)	0.0010*** (0.0037)	0.0095*** (0.0036)	0.0094*** (0.0036)	0.0092*** (0.0034)
GROWTH	-0.0230*** (0.0087)	-0.0247* (0.0148)	-0.0239*** (0.0096)	-0.221 (0.0158)	-0.0219*** (0.0088)	-0.0244 (0.0173)
Constant	-0.0043 (0.0275)	0.0030 (0.0275)	-0.0141 (0.0281)	0.0191 (0.0261)	-0.0021 (0.0272)	0.0255 (0.0266)
F-test	7.62***	10.40***	7.31***	18.34***	8.56***	9.12***
R ²	0.1477	0.1830	0.1362	0.2434	0.1701	0.2399
N	156	156	156	156	156	156

Note: ***1% significance level, **5% significance level, *10% significance level, two tailed. Numbers in parenthesis denote the robust standard error

6. CONCLUSION

Information related to firm's profitability and capital structure is important to the stakeholders of the company especially lenders for better understanding and review of the cash flows, market value, the magnitude of firm's assets and liabilities, volatility of the firm's assets, liquidity of company assets and others on a regular basis to monitor the companies. Doing this is important for any economic situation to be more exact during the economic recession period. Sales level is likely to go down which calls forth the problem of cash inflow for the companies when the economy faces a recession (Hamid et al., 2015). In the wake of that, the firm's capacity to pay the liability payments shrinks. Therefore, lenders and companies can reduce the risk of being default in liability payments by understanding and proper assessment of a firm's cash flow (Gill et al., 2011).

Table-11. Regressions results of other dependent variables.

Variables	Models	Firm Types	Stdta	Ltdta	Tdta	Lnsiz	Growth	Constant	F-Test	R ²	N	
Dependent Variable - ROS	Model 1	FF	-0.1626*** (0.0545)			0.0200* (0.0116)	0.0834*** (0.0326)	-0.0560 (0.0943)	6.14***	0.1514	195	
		Non-FF	-0.1387*** (0.0236)			-0.0033 (0.0035)	0.0306 (0.0284)	0.1334*** (0.0298)	13.27***	0.1258	195	
	Model 2	FF		-0.0673 (0.0711)		0.0215* (0.0117)	0.0778** (0.0327)	-0.0918 (0.0989)	3.02**	0.1113	195	
		Non-FF		- 0.3150*** (0.0391)		-0.0052 (0.0034)	0.0301 (0.0272)	0.1515*** (0.0293)	24.26***	0.2049	195	
	Model 3	FF				-0.1535*** (0.0490)	0.0210* (0.0117)	0.0848*** (0.0325)	-0.0556 (0.0958)	6.96***	0.1524	195
		Non-FF				-0.1398*** (0.0238)	-0.0058* (0.0034)	0.2913 (0.2737)	0.1639*** (0.0302)	11.55***	0.2129	195
Dependent Variable - Profit Margin	Model 1	FF	-0.1643*** (0.0527)			0.0132* (0.0080)	0.0677*** (0.0236)	0.1455** (0.0634)	5.77***	0.1174	195	
		Non-FF	-0.1606*** (0.0307)			-0.0017 (0.0079)	0.0648* (0.0358)	0.2715*** (0.0607)	12.00***	0.0617	195	
	Model 2	FF		-0.0727 (0.0932)		0.0139* (0.0084)	0.0605** (0.0255)	0.1071 (0.0673)	2.42**	0.0713	195	
		Non-FF		- 0.4952*** (0.0674)		-0.0062 (0.0075)	0.0628* (0.0349)	0.3204*** (0.0579)	22.22***	0.1610	195	
	Model 3	FF				-0.1298*** (0.0488)	0.0142* (0.0081)	0.0679*** (0.0247)	0.1398** (0.0644)	4.82***	0.1039	195
		Non-FF				-0.1866*** (0.0322)	-0.0057 (0.0078)	0.0624* (0.0360)	0.3210*** (0.0606)	12.19***	0.1245	195

Note: ***1% significance level, **5% significance level, *1% significance level, two tailed. Numbers in parenthesis denote the robust standard error.

That's why the decision on the capital structure of a firm is very significant to run the business operation in a successful way. An optimum decision on capital structure is indispensable as it helps to maximize the earnings and to minimize the degree of costs and risks associated with it. But this high concern issue is less explored in Bangladesh. Several studies analyzed the association of firm performance with capital structure but no study did it by separating the family firms from non-family firms in Bangladesh. Therefore, this study sets its aim to investigate the relationship between capital structure and profitability of family and non-family firms in Bangladesh. In this study, three leverage ratios namely short-term debt over total assets, long-term debt over total assets and total debt over total assets are used as the proxies of capital structure and return on assets (ROA) is used as the proxy of firm's profitability. A sample of 390 firm-year observations covering a period of 2013-2017 in a row is used to fulfill the objective of the paper.

The empirical results show that there is a negative relationship between debt financing and the firm's profitability in Bangladesh. It means that an increase in leverage ratio is related to a decrease in a firm's profitability. The more the debt in capital structure, the lower the profitability of the family and non-family firms in Bangladesh. According to the result of the multivariate regressions of this investigation, it is reported that STDTA, LTDTA, and TDTA are negatively and significantly associated with ROA for both family and non-family firms. Two additional analyses (year dummy model and lagged independent variable model) also report the same results. The significant negative relationship between debt financing and ROA is also documented in the study of Hasan et al. (2014). Finally, this negative association of profitability with all three leverage ratios implies that this paper doesn't agree with the trade-off theory as this theory states that profitable firms depend more on debt financing for further enhancement of their profits (Ting & Lean, 2011). Contrary, the finding of this paper is in line with the pecking order theory and this is consistent with Hamid et al. (2015). Pecking order theory outlines a hierarchy of financial choices for a company where a firm starts from its internal financing, then prefers to use debt financing and finally depends on outside financing from equity (Nadaraja et al., 2011). According to the pecking order theory, a profitable firm should depend more on internal financing than external financing as its capital structure which supports the findings of this study.

In a nutshell, all three leverage ratios are negatively associated with the firm's profitability in Bangladesh regardless of the family types. This paper supports the concept of pecking order theory but disagrees with the trade-off theory.

This study conveys some contributions. It is the first study that investigates the relationship between capital structure and profitability by taking the relevant information from family and non-family firms in Bangladesh. So, this paper will extend the existing literature on capital structure and profitability with a new dimension. This paper can help lenders to rethink their investments in a firm based on its capital structure. Finally, this investigation suggests firms depend more on equity than debt financing. This paper also has some limitations. First, the sample firms used in this study are very low. Second, only the manufacturing firms are used in this paper. Third, the R squares for family and non-family firms are very low. Fourth, this study doesn't find any significant differences in the capital structure of family and non-family firms. So, future researchers are most welcome to extend this issue by covering the above-mentioned points along with the new methodology to find out whether there are any significant differences between family and non-family firms' capital structure.

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