

Influence of Capital Structure on Firm Performance: Evidence from Bangladesh

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Abstract

This paper mainly studies the influence of capital structure on firm's performance. This investigation has been performed on a sample of 36 Bangladeshi firms listed in Dhaka Stock Exchange during the period 2007–2012. We have used four performance measures; earnings per share (EPS), return on equity (ROE), return of asset (ROA) and Tobin's Q; as dependent variables and three capital structure ratios; short-term debt, long-term debt and total debt ratios; as independent variables. Using pooling panel data regression method, we found that EPS is significantly positively related to short-term debt while significantly negatively related to long-term debt. There is significant negative relation between ROA and capital structure. On the other hand, there is no statistically significant relation exists between capital structure and firm's performance as measured by ROE and Tobin's Q. Nonetheless, aside from the positive relation between EPS and STDTA, we can conclude that capital structure has negative impact on firm's performance which is consistent with the proposition of Pecking Order Theory.

Keywords: capital structure, firm performance, panel data

1. Introduction

Capital structure is the combination of a firm's long-term debt, specific short-term debt, common equity, preferred equity and retained earnings which are used to finance its overall operations and growth. Capital structure is a very important financial decision as it is directly related to the risk and return of a firm. Any immature capital structure decision can result in high cost of capital; thereby lowering firm's value while effective capital structure decision can do the opposite. Some scholars also defined capital structure in their own ways. The term 'capital structure' is defined by Weston and Brigham (1979) as the permanent financing of the firm represented by long-term debt, preferred stock and net worth. According to Van Horne and Wachowicz (1995), capital structure is the mix of a firm's permanent long-term financing represented by debt, preferred stock, and common stock equity. From the above discussion, it is clear that capital structure combines mainly equity and long-term debt. Traditionally capital structure does not consider short-term debt, but in our study we do consider it.

Since many years, both researchers and academicians are performing theoretical and empirical studies on capital structure, but it drew attention to the financial economists after Modigliani and Miller's (1958) "irrelevance theory of capital structure" (hereafter referred to as MM theory). All researches suggests that there is an optimal capital structure; the one that maximizes the value of the firm and simultaneously minimizes the cost of capital thus striking a balance between risk and return. However, it is not yet possible to provide financial managers with a precise methodology for determining a firm's optimal capital structure (Gitman & Zutter, 2010). After MM propositions, many studies were focused in finding the optimal capital structure. Even though MM theory is based on some unrealistic assumptions, for instance, the assumption of perfect capital markets, this theory provides us a basis to perform research on capital structure. Hitherto four major theories of capital structure emerged; such as the trade-off theory, agency costs theory, pecking order theory, and market timing theory.

According to Modigliani and Miller (1958), under perfect capital markets assumption, the capital structure has no impact on firm's value. This theory is criticized by many researchers objecting that there are no perfect capital markets in reality, although later they revised their earlier theory by incorporating tax benefit and argued that under market imperfection where interest payments are tax deductible, firm value will increase with the level of financial leverage (Modigliani & Miller, 1963).

The trade-off theory argues that firms trade off the benefits and costs of debt and equity financing and reach to an optimal capital structure even with the market imperfections such as taxes, bankruptcy costs and agency costs. Profitable firms can borrow more up to a certain level, because after that the profitability and the value of the firm will decrease due to interaction of bankruptcy costs and agency costs. However, to expand the MM theory, Jensen and Meckling (1976) developed agency costs theory. According to agency costs theory, the agency problem is caused by a conflict of interest between shareholders and managers (agency cost of equity) or between shareholders and debt holders (agency cost of debt). Thus, the use of debt will reduce the agency cost since the payment of interest reduces the surplus cash (Suleiman, 2013).

In contrast to trade-off theory, Myers and Majluf (1984) introduced the pecking order theory which articulates that optimal capital structure does not exist. They argued that to minimize the problem of asymmetric information between firms' managers and investors, financial pecking order; i. e. a hierarchy of financing that begins with retained earnings, which is followed by debt, and finally new stock issues, takes place. Recently, Baker and Wurgler (2002) have recommended a new theory of capital structure; "market timing theory of capital structure" which suggests that managers can increase current shareholder's wealth by timing the issue of securities. Therefore, firms time their equity issues by selling new stocks when the stock price is perceived to be overvalued, and buying back own shares when they are undervalued.

From the above discussion, one important thing is obvious that the basic drive of all the theories of capital structure is to recognize whether the capital structure has any impact on firm's performance or not. Extensive empirical researches have been performed to study the relationship between capital structure and firm's performance although Bangladesh has very little contribution in this literature. Therefore, this effort is attempted by us. However, this study aims to examine the relationship between capital structure choices and firm's performance employing a sample of 36 firms listed in Dhaka Stock Exchange for the period 2007-2012. Applying panel data regression analysis, we found mixed result about the relation between them.

The rest of the paper is therefore arranged as below: Part 2 discusses the previous literature. Part 3 focuses on Methodology and data. Part 4 presents the result analysis of this research, and Part 6 concludes the study.

2. Literature Review

After Modigliani and Miller's (1958) "irrelevance theory of capital structure", the capital structure theory has been a study of interest to finance economists. Extensive researches have been performed to investigate the relationship between capital structure and firms' performance in different countries while Bangladesh has very little contribution in the literature. Firms' behavior in developed countries could differ from that in developing countries. Since Bangladesh is a developing country, it would be logical to discuss previous works from developing countries.

Some authors got positive relationship; some got negative relationship while others got mixed or no relationship between capital structure and firm's performance. Some of the major contributions in the literature on this topic have been discussed in the below.

Roden and Lewellen (1995) employed a sample of 48 U.S. firms during 1981-1990 and found a positive relation between profitability and capital structure. Analogous results were also observed by Champion (1999), Ghosh, Nag, and Sirmans (2000), Hadlock and James (2002). They all concluded that firms with highly profitable firms use high-level of debts.

Margaritis and Psillaki (2010) observed a significant positive relation between leverage and firm's performance. They used a sample of both low and high growth French firms for the period 2003-2005 and found that leverage have positive effect on firms' efficiency over the entire sample.

Using panel data consisting of 257 South African firms over the period 1998 to 2009, Samuel (2013) investigated the association between capital structure and firm performance. To test the relationship, he used GMM regression approach and found a positive and significant relation between financial leverage and firm's performance. Aliakbar, Seyed and Pejman (2013) also found a significant positive link between capital structure and firm performance in the Tehran Stock Exchange.

In contrast, a rigorous study was performed by Rajan and Zingales (1995) to investigate the capital structure of

48 from the U.S. during the period 1981–1990. Result of that study revealed that there is a negative relation between profitability and debt-level, and the relationship would be more visible if firm size gets bigger. They also added that if return on stock and investments are fixed in a short term, and the main way of external financing is debt, there is a negative correlation between performance and leverage.

Gleason, Lynette, and Ike (2000) concluded that high levels of debt in the capital structure would reduce the firm's performance. They observed that firm's capital structure has a statistically significant negative effect on firm's performance matrixes, i.e., return on assets (ROA), growth in sales (Gsales), and pretax income (Ptax).

A negative link between capital structure and firm's performance was also witnessed by Fama and French (2002). They observed that highly profitable firms with lower risk of financial distress are actually less levered which contradicts with the trade-off theory.

Nor and Fatihah (2012) tried to explore the impact of debt and equity financing on the performance of the firms listed in Bursa Malaysia. Using a sample of 130 firms for the period 2001-2010 combined with multiple regression analysis, they cited a statistical significant negative relation between capital structure and firms' performance.

Manawaduge, Zoysa, Chowdhury, and Chandarakumara (2011) concluded that most of the Sri Lankan firms employ short-term debt capital as against the long-term debt and firm performance is negatively affected by the use of debt. Similar result was also noticed in Nigeria by Amos and Jeremiah (2013). In addition, they documented that firms use retained earnings first, then debts and finally equity.

With cross sectional time series fixed effect model, Anup and Suman (2010) examined the link between capital structure and firm value in Bangladesh. They found that maximizing the wealth of shareholders demands a perfect mixture of debt and equity, whereas cost of capital has a negative correlation in this choice and it has to be as least as possible. Khairul (2013) also witnessed significant negative relation between profitability and leverage in Bangladeshi firms.

However, some authors revealed mixed results. In this line, Kinsman and Newman (1998) studied the relationship between debt level (including three measures of debt level) and firm's performance and detected diverse results. This study found that earnings are negatively correlated with short-term debt, but are positive with long-term debt. A similar result was found by Mesquita and Lara (2003) in Brazil.

Tianyu (2013) examined the influence of capital structure on firm's performance in both developed and developing markets. A sample of 1200 listed firms in Germany and Sweden and 1000 listed firms in China for the period 2003-2012 has been used in his study. Applying OLS regression method, he documented that capital structure has a significant negative effect on firm's performance in China, whereas, significant positive effect in two European countries, i.e., Germany and Sweden, before financial crisis in 2008.

Using a sample of 237 Malaysian companies during 1995-2011, Salim and Yadav (2012) studied the relationship between capital structure and firm performance. Their analysis revealed that firm performance measured by ROA, ROE and EPS have negative relationship with the capital structure while Tobin's Q has significantly positive relationship with STD and LTD. Similar result was observed by Zeitun and Tian (2007) in their study for a sample of 167 Jordanian companies during 1989–2003.

Ali and Iman (2011) observed that firm's performance, calculated by EPS and Tobin's Q, is positively related with the capital structure, while they got a negative relation between capital structure and ROA. However, they witnessed no significant relationship between ROE and capital structure. Same result was also found by Ebrati, Farzad, Reza, and Ghorban (2013).

Abor (2005) also investigated the link between capital structure and profitability of firms listed in Ghana Stock Exchange for the period 1998–2002. Using regression analysis, he witnessed a significantly positive relation among ROE and the short-term debt and total debt ratio, while, a negative relation with long-term debt.

Conversely, some researchers observed weak to no relation. Phillips and Sipahioglu (2004) documented no significant link between capital structure and firm's performance for publicly traded UK lodging firms; lodging firms seem to prefer external sources as capital return is at a low level.

Ibrahim (2009) also examined the influence of capital-structure choice on firm performance in Egypt. His study based on a sample of non-financial listed firms for the period 1997 to 2005 and used multiple regression analysis. Results suggested that firm performance has weak to no relationship with capital structure choice. Likewise, Khalaf (2013) also found negative and insignificant relationship between short-term and long-term debt ratio, and ROA and profit margin.

3. Data and Methodology

3.1 Data and Sample

In developing countries like Bangladesh, to collect data is a troublesome task. Our study mainly considers firms listed in Dhaka Stock Exchange (DSE). Total 254 companies from different sectors are listed in DSE till October, 2013. We exclude all financial institutions, banks and insurance companies from our sample due to their different capital structures and operations. We also exclude newly listed firms. Further we have to eliminate some more firms due to unavailability of data. Finally, our sample consists of 36 firms mostly come from cement, food, fuel & power, Pharmaceuticals and miscellaneous sectors. These firms are observed over 2007-2012 periods, allowing us to form a canister of panel data of 216 observations. All data are amassed from secondary sources; i.e. annual reports of the sample firms.

3.2 Variables

The goal of this study is to examine the influence of capital structure on firm's performance. In this study, four dependent variables; i.e. earnings per share (EPS), return on equity (ROE), return on asset (ROA) and Tobin's Q are used as the representative of firm's performance measures. EPS is the most fundamental of a firm's performance measures which is calculated as net profit after tax divided by number of shares outstanding. ROE is an important profitability ratio that is defined as net profit after tax divided by total equity. ROA is calculated as net profit after tax divided by total assets. Tobin's Q is a popular performance measure which was introduced by James Tobin in 1969 and is defined as total market value of the firm divided by the book value of total assets of the firm.

On the other hand, three independent variables; i.e. the ratio of short-term debt to total assets (STDTA), ratio of long-term debt to total assets (LTDTA) and the ratio of total debt to total assets (TDTA) are employed as the representative of capital structure. In addition, size of the firm (Size) which is determined by logarithm of total assets is also considered as controlled variable.

3.3 Model

To investigate the influence of capital structure on firm's performance, this study uses pooling panel data regression models. The basic pooling panel data ordinary least square (OLS) regression model is given in the below:

$$Y_{it} = \alpha + X_{it}\beta + \varepsilon_{it}$$

Here, $i = 1, 2, \dots, N$; $t = 1, 2, \dots, T$

Where; Y_{it} is the dependent variable (firm's performance) of firm i in period t . X_{it} is the independent variable (capital structure) of firm i in period t . β is the regression coefficient and ε_{it} is the error term.

In panel data analysis, many authors used only pooled ordinary least square (OLS) estimation model. But, the problem with this model is its failure to control for time-invariant firm specific heterogeneity i.e. unobserved fixed effect. Therefore, the model may produce partial and biased results. On the other hand, fixed effects model has also limitation as it assumes that each cross-section's intercept does not vary across time. Since, each of the pooling models has limitations, it would not be correct to use only one model. However, in this study we have used three different pooling models; i.e. pooled OLS model, fixed effects model and random effects model.

To facilitate the choice of suitable pooling models, we used F-test and Hausman test. At first, we run F-test to choose between pooled and fixed effects models. After that, Hausman test are applied to select between a fixed or random effects specification. To test heteroskedasticity in the model, White's test and Wald test are employed. Durbin Watson statistic is also used to test autocorrelation in the regression model. Moreover, to test the stationary of all the variables, Levin, Lin and Chu (2002) test is employed.

Nonetheless, using the following regression models, this study will examine the influence of capital structure choice on firm's performance:

$$EPS_{it} = \alpha_{it} + STDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (1)$$

$$EPS_{it} = \alpha_{it} + LTDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (2)$$

$$EPS_{it} = \alpha_{it} + TDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (3)$$

$$ROE_{it} = \alpha_{it} + STDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (4)$$

$$ROE_{it} = \alpha_{it} + LTDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (5)$$

$$ROE_{it} = \alpha_{it} + TDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (6)$$

$$ROA_{it} = \alpha_{it} + STDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (7)$$

$$ROA_{it} = \alpha_{it} + LTDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (8)$$

$$ROA_{it} = \alpha_{it} + TDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (9)$$

$$Tobin's Q_{it} = \alpha_{it} + STDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (10)$$

$$Tobin's Q_{it} = \alpha_{it} + LTDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (11)$$

$$Tobin's Q_{it} = \alpha_{it} + TDTA_{it}\beta_0 + Size_{it}\beta_1 + \varepsilon_{it} \quad (12)$$

Where, EPS_{it} (Earning per share), ROE_{it} (Return on equity), ROA_{it} (Return on asset), and Tobin's Q_{it} are financial performance indicators for firm i in year t . $STDTA_{it}$, $LTDTA_{it}$ and $TDTA_{it}$ indicate short-term debt, long-term debt and total debt to total asset ratios for firm i in year t , respectively. $Size_{it}$ denotes natural logarithm of total assets for firm i in year t which is a controlled variable in the models. And α , β_0 and β_1 are regression coefficients and ε_{it} is the error term. However, Microsoft Excel and Gretl software were used to perform all the statistical computations necessary for this study.

4. Result Analysis

4.1 Descriptive Statistics

Table 1 presents a summary of descriptive statistics of the dependent and independent variables used in this study. This table mainly shows mean, high, low value, standard deviation and unit root test (LLC) of the variables and provides a general overview of the characteristics of the data. It is interesting that all the variables have positive mean. However, the mean EPS, ROE and ROA are 9.44, 0.13 and 0.07 respectively which reveal that the Bangladeshi firms have very poor return or performance during the sample period, i.e., 2007-2012. Since the inflation rate in Bangladesh was very high; around 8% during last several years, the real rate of return would be lesser. The Mean of the Tobin's Q is 1.68 which is greater than one implying that the market value of listed companies in Dhaka stock exchange is more than their book values. This indicates that additional investment is needed for the firms since the profits generated are higher than the cost of using the assets of the firms. On the other hand, the mean of the $STDTA$, $LTDTA$ and $TDTA$ are 40.36, 16.29 and 56.65 percent respectively which indicate that most of the Bangladeshi companies are highly levered. Moreover, they heavily depend on short term debt which is a risky mode of finance for a firm. Finally, the results of the LLC test propose that all the variables do not have unit root; i.e., all the variables are stationary.

Table 1. Descripted statistics

	EPS	ROE	ROA	Tobin's Q	STD	LTD	TD	SIZE
Mean	9.4378	0.1281	0.0649	1.6825	0.4036	0.1629	0.5665	9.3644
Median	5.0000	0.1333	0.0456	1.2991	0.3940	0.1068	0.5729	9.2350
Minimum	(5.8000)	(3.5000)	(0.1656)	0.0958	0.0432	0.0003	0.1748	7.9076
Standard Deviation	10.9680	0.3441	0.0671	1.4274	0.2267	0.1691	0.2252	0.6936
Skewness	1.5223	(4.6551)	0.5933	1.9821	0.6371	1.4665	0.3924	0.3868
Kurtosis	1.6625	60.2020	0.9692	6.1662	(0.0794)	1.5203	(0.4520)	(0.6703)
Observations	216	216	216	216	216	216	216	216
Unit Root test: LLC Test	-9.3161*	-8.2177*	-6.1087*	-4.9077*	-4.3008*	-5.9447*	-7.7274*	-4.6396*

Note. *Significant at the 0.01 level.

4.2 Regression Analysis

To examine the relationship between firm performance and capital structure, we have developed twelve distinct regression models in earlier section. Using Gretl we have first carried out panel ordinary least square regression analysis for each twelve models where Gretl facilitate the panel diagnosis. The panel diagnosis helps us to make a choice among pooled, fixed effects and random effects models using F-test and Hausman test. The panel diagnosis suggested for fixed effects model over other models. Therefore, all the regression models were based on the fixed effect models. Furthermore, all the models were tested for heteroskedasticity using White's test and Wald test; and found no heteroskedasticity.

Table 2 shows the results for Models 1 to 3 which examined the relationship between EPS and capital structure

ratios. The results show that EPS has significant positive relation with STDTA at 5% level where significant negative relation with LTDTA at 1% level. But, EPS has insignificant negative relation with TDTA. All models have very high adjusted R^2 (75.11, 76.36 and 74.35 percent respectively) indicating the ability of the models explaining the variation of EPS due to variation of independent variables (debt levels and size) is very high. The F-value shows that the explanatory variables are jointly statistically significant in the model and the Durbin-Watson (DW) statistics reveals that there is no autocorrelation in the models. In addition, EPS has no significant relation with the control variable; firm size at 5% level. The finding for STDTA is consistent with Ali and Iman (2011), Hadlock and James (2002) and Suleiman (2013) while the finding for LTDTA is consistent with Rajan and Zingales (1995), Suleiman (2013). And the finding for TDTA is consistent with Salteh, Ghanavati, Khanqah, and Khosroshahi (2012).

Table 2. Relations between EPS and debt levels

Models	Fixed Effects Model			
		Coefficient	T-ratio	P-value
Model 1	Const	-36.6287	-1.601	0.1111
	STDTA	10.8613	2.389	0.0179**
	Size	4.45119	1.884	0.0612*
	Adj R^2		0.7511	
	F-Value		18.5378***	
	Durbin-Watson		2.9351	
Model 2	Const	15.3346	0.7224	0.471
	STDTA	-22.7194	-3.921	0.0001***
	Size	-0.234605	-0.105	0.9165
	Adj R^2		0.7636	
	F-Value		19.7664***	
	Durbin-Watson		2.1236	0.8449
Model 3	Const	-5.03198	-0.1959	0.6197
	STDTA	-2.16679	-0.4971	0.5195
	Size	1.67627	0.6454	
	Adj R^2		0.7435	
	F-Value		17.8438***	
	Durbin-Watson		1.5361	

Note. * significant at 0.10, ** significant at 0.05 and *** significant at 0.01 level.

Table 3 represents the results for models 4 to 6 which investigated the relationship between ROE and capital structure ratios. The results indicate that there are negative correlation between ROE and debt levels (STDTA, LTDTA and TDTA), but is not significant at 10% level of significance. Low value of adjusted R^2 (12.82, 12.72 and 12.84 percent respectively) is observed. From the DW statistics no autocorrelation is observed. The results are consistent with Zeitun and Tian (2007), Ebaid (2009) and Ali and Iman (2011).

Table 3. Relations between ROE and debt levels

Models	Fixed Effects Model			
		Coefficient	T-ratio	P-value
Model 4	Const	1.0348	0.7705	0.4420
	STDTA	-0.1256	-0.4705	0.6386
	Size	-0.0914	-0.6590	0.5107
	Adj R ²		0.1282	
	F-Value		1.8546***	
	Durbin-Watson		2.4728	
Model 5	Const	0.7967	0.6226	0.5343
	STDTA	-0.0333	-0.0953	0.9241
	Size	-0.0708	-0.5257	0.5998
	Adj R ²		0.1272	
	F-Value		1.8467***	
	Durbin-Watson		2.4708	
Model 6	Const	1.2016	0.8089	0.4197
	STDTA	-0.1293	-0.5131	0.6085
	Size	-0.1068	-0.7111	0.4780
	Adj R ²		0.1284	
	F-Value		1.8562***	
	Durbin-Watson		2.4764	

Note. * significant at 0.10 , ** significant at 0.05 and *** significant at 0.01 level.

Table 4 shows the results for models 7 to 9 which test the relationship between ROA and capital structure ratios. The results confirm that ROA has significant negative relation with STDTA at 10% level and with LTDTA and TDTA at 1% level. High adjusted R² (71.63, 72.37 and 73.34 percent respectively) is found. The F-value for all models is also significant at 1% level. The control variable; size has negative relation with ROA in all models, but not significant in models 7 and 8 while significant in model 9 at 5% level. DW statistics reveals that there is no autocorrelation in the models. These results are consistent with Rajan and Zingales (1995), Gleason et al. (2000), Manawaduge et al. (2011), Ali and Iman (2011), Salim and Yadav (2012), Anup and Suman (2010) and Nor and Fatihah (2012) who found a significant negative relationship between capital structure and firm's performance.

Table 4. Relations between ROA and debt levels

Models	Fixed Effects Model			
		Coefficient	T-ratio	P-value
Model 7	Const	0.2513	1.6810	0.0945*
	STDTA	-0.0538	-1.8140	0.0714*
	Size	-0.0175	-1.1390	0.2563
	Adj R ²		0.7163	
	F-Value		15.6749***	
	Durbin-Watson		2.3902	
Model 8	Const	0.2654	1.8900	0.0603*
	STDTA	-0.1092	-2.8510	0.0049***
	Size	-0.0195	-1.3200	0.1880

	Adj R ²		0.7237	
	F-Value		16.2215***	
	Durbin-Watson		2.4350	
Model 9	Const	0.4935	3.0800	0.0024***
	STDTA	-0.1050	-3.8620	0.0002***
	Size	-0.0394	-2.4320	0.016**
	Adj R ²		0.7334	
	F-Value		16.9889***	
	Durbin-Watson		2.4298	

Note. * significant at 0.10, ** significant at 0.05 and *** significant at 0.01 level.

Table 5 represents the results for models 10 to 12 which investigate the influence of capital structure on the Tobin's Q. The results show insignificant positive relation between Tobin's Q and STDTA and TDTA at 10% levels whereas insignificant negative relation exists between Tobin's Q and LTDTA at 10% level. The size has also insignificant negative relation with Tobin's Q. According to DW statistics, there is no autocorrelation in the models. These results are also consistent with Zeitun and Tian (2007), Abor (2007), Salteh, et al. (2012) and Ebrati et al. (2013).

Table 5. Relations between Tobin's Q and debt levels

Models	Fixed Effects Model			
		Coefficient	T-ratio	P-value
Model 10	Const	4.4296	1.1000	0.2728
	STDTA	0.4426	0.5530	0.5809
	Size	-0.3124	-0.7512	0.4535
	Adj R ²		0.5447	
	F-Value		7.9509***	
	Durbin-Watson		2.4731	
Model 11	Const	7.0231	1.8380	0.0677*
	STDTA	-1.3144	-1.2610	0.2091
	Size	-0.5474	-1.3610	0.1752
	Adj R ²		0.5479	
	F-Value		8.0427***	
	Durbin-Watson		2.4541	
Model 12	Const	6.4141	1.4390	0.1518
	STDTA	0.2906	-0.3843	0.7012
	Size	-0.4877	-1.0820	0.2805
	Adj R ²		0.5443	
	F-Value		7.9395***	
	Durbin-Watson		2.4408	

Note. * significant at 0.10, ** significant at 0.05 and *** significant at 0.01 level.

5. Conclusions

This study aims to examine the influence of capital structure on firm's performance using a sample of 36 Bangladeshi firms for the period 2007–2012. The results of this study reveal that the firm's performance as calculated by EPS is significantly positively linked to capital structure as measured by STDTA. In contrast, EPS is significantly negatively related to LTDTA while EPS has insignificant relation with TDTA. This study also finds no statistically significant relationship between ROE and capital structure.

On the other hand, statistically very significant relationship exists between ROA and capital structure; i.e. ROA has significant negative relation with all debt levels (STDTA, LTDTA & TDTA). Lastly, our findings indicate that there is no statistically significant relation between Tobin's Q and capital structure. It is also observed that

the controlled variable; firm size has positive impact on EPS and negative impact on ROA. Another important observation is that LTDTA has negative impact on all the measures (EPS, ROE, ROA and Tobin's Q) of firm's performance. With the exception of the positive relation between EPS and STDTA, we can conclude that capital structure has negative impact on firm's performance. That is, the more the debts incorporate in the capital structure, the less the firm's performance and vice versa. Even though, these findings are in contrast to trade-off theory, this is consistent with the proposition of Pecking Order Theory as developed by Myers and Majluf (1984). Various popular studies such as Harris and Raviv (1991), Rajan and Zingales (1995), Fama and French (2002), Gleason, Lynette, and Ike (2000), Booth, Aivazian, Demircuc-Kunt, and Maksimovic (2001), Manawaduge at el (2011) and Anup and Suman (2010) also support this negative relationship.

Nonetheless, this negative relationship can be explained by the higher cost of debt and strong covenants attach to the use of debt due to underdeveloped equity and debts (long-term) markets in Bangladesh. In addition, our results also suggest that the finance managers should use debts as last alternative in their capital structure. To the end, our study can be extended by incorporating more controlled variables, larger sample and longer period data in the regression models to get better results. Other measures and methodology can also be employed.

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