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# THE DETERMINANTS OF CAPITAL STRUCTURE OF COMPANIES IN AN EMERGING ECONOMY: A CRITICAL REVIEW

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## Abstract

Capital structure is one of the important corporate finance decisions. Trade off theory suggests the existence of optimal capital structure at which firm value is maximized. But the optimal capital structure varies with a number of firm characteristics and its business environment. Hence, understanding the determinants of capital structure is important. Researchers have identified number of determinants of capital structure, however the relationship of these determinants with capital structure is found to be varied. It is also evident that companies operating in different economies generally have different capital structure. Hence it is worth exploring the determinants of capital structure for companies operating in a particular economy. Bangladesh is an emerging economy characterized by high GDP growth, rapid infrastructural development, evolving banking sector and capital market growth. In this context, a review of the determinants of capital structure of Bangladeshi companies is worth exploring. This research therefore does a systematic review of the literature on the determinants of capital structure of the companies in Bangladesh. The objective is to summarize the findings of the empirical researches, analyze the findings in light of the existing theories of capital structure, and compare the findings with those of other emerging and developed economies. The findings of the study will be of significant use for practitioners in determining and justifying appropriate capital structure of their companies. The analysis done in this paper also proposes modification of the existing capital structure theories as such to add several macro factors into account. Future researchers may use the findings of this paper as the base line to identify the focus of further research.

## Keywords

Capital Structure, Determinants, Bangladesh, Emerging Economy

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## 1. INTRODUCTION

Capital structure refers to the proportion of different sources of funds (especially debt and equity) to finance a business. Choice of appropriate capital structure is one of the significant decisions of corporate financial management. Capital structure choice has implications over the risk level, power dynamics among different stakeholders, sustainability of operation, profitability and above all shareholders' wealth of any business. Hence, capital structure is a widely researched topic of corporate finance. Several capital structure theories namely Agency theory, Pecking-order theory, Static Trade-off theory, Free Cash Flow theory and Signaling theory have been emerged from literature. But the theories do not suggest any straightforward formula for determining optimal capital structure. Practical applications of the theories are thus vague. Because of this, practitioners and academicians turn to real world evidence to understand the capital structure of firms. None of the empirical research on capital structure could yet acknowledge any of the existing theories to be universal. Empirical researchers also thrived to identify the determinants of capital structure. Different studies have identified many different sets of determinants. Even in case of the common determinants, the level of significance and their influence on capital structure have found to be varying across different researches. Such variations in the findings demonstrate the scope for further research on the topic. Moreover, it is evident from empirical data that companies operating in different economies and regulatory regimes have very different capital structure and its determinants. Hence it is worth exploring the determinants of capital structure for companies operating in a particular economy. Bangladesh is an emerging economy characterized by high GDP growth, rapid infrastructural development,

evolving banking sector and capital market growth. In this context, a review of the determinants of capital structure of Bangladeshi companies is important. Such a review will holistically comprehend the determinants of capital structure in an emerging economy. This research therefore conducts a systematic review of the literature on the determinants of capital structure of the companies in Bangladesh.

The objective is to summarize the findings of the empirical researches, and analyze the findings in light of the existing theories of capital structure.

The findings of the study will be of significant use for practitioners in determining and justifying appropriate capital structure for their companies under differing contexts. By doing a thorough comprehension of the empirical findings of other researchers, this study contextualizes the existing capital structure theories. New theories of capital structure may evolve from further studies on the topic.

## 2. RESEARCH METHOD

As it is a review research, only secondary sources are explored. Mainly, published journal articles, and conference papers related to the determinants of capital structure has been reviewed for this study. Articles / papers are downloaded from google scholar by key word search. Key words include the following- ‘determinants of capital structure in emerging economies’, ‘determinants of capital structure in developing economies’, ‘determinants of capital structure in Bangladesh’, ‘factors affecting capital structure of companies in Bangladesh’, ‘capital structure of Bangladeshi companies’ and ‘capital structure of companies in emerging economies’. To maintain recency and relevance of the study, publications after 2008 are largely chosen. Mostly empirical works are chosen with a few exceptions. Thus total 21 articles that investigated the determinants of capital structure were chosen. Among these 21 articles, 14 articles empirically scrutinized the determinants of capital structure on the companies in Bangladesh. Only one study focused on the companies in the US. Another study is a literature review, and the rest are empirical studies focusing on different emerging economies. Table 1 presents the contextual distribution of the sampled papers.

Selected papers are then read thoroughly and analyzed along 5 aspects- i) Context of the study- which includes the time frame covered and industry classification of the sampled companies, ii) Used measures/ proxies of capital structure iii) Determinants (independent and control variables) considered iv) Data analysis technique employed and v) Summary of the findings.

Context	No. of papers
Companies in Bangladesh	14
Companies in other emerging economies e.g., Sri Lanka, India, Pakistan, Thailand, Malaysia, Singapore, Turkey, Greece, Italy, Portugal etc.	5
Companies in the US	1
Literature review of studies in developed and developing economies	1
Total	21

**Table 1: Contextual distribution of the sampled papers**

## 3. LITERATURE REVIEW

Graham and Harvey (2001) survey on 392 chief finance officers (CFOs) of US companies suggest that most firms have a target capital structure. However, they mostly employ flexibility in the target, which means they don't adjust capital structure with the changes in the company's share price. Fan et al. (2012) have compared the median leverage ratio of sampled firms from 39 different countries and found that debt to value ratio ranges over 50 percent for Korea to slightly under 10 percent for Australia. Agrawal and Nagarajan (1990) found that a number of firms in the US do not have any debt. These firms are characterized by high level of management ownership and/or family ownership. Theoretically, reduction of corporate tax is the prime motivation for debt financing (MM propositions). Hence, companies should maximize the debt tax benefit as such to downright elimination of corporate tax. However, the results of empirical researches presented above suggest that practically companies seldom do so. It is also evident that there is significant interindustry difference in debt to value ratio. Typically, companies in rapidly growing industries have low debt ratio whereas those in capital intensive industries (having substantial amount of tangible assets) maintain higher debt ratio (Ross et al., 2021).

Time series analysis of capital structure of companies in different economies reveal that capital structure changes over time. For example, over the last decade median debt to book value of equity ratio (D/BookE) of European companies ranges between 77% to 111%. It hit the lowest value in 2011 and peaked in 2020 (Manciaracina, 2021). However, the US companies' median D/BookE ratio did not fluctuate much over the last decade, it ranged 95% to 100% (Statista, 2022). In contrast, the median D/BookE ratio of companies in emerging economies over the decade since 2004 ranges between 59% and 64%. Alter and Elekdag, (2020) assert that volatile

financial condition of the emerging economies, their dependence on foreign investment, and lack of flexibility of exchange rates are responsible for such lower average corporate leverage. However, accommodative monetary policy of the US and improvement in global financial condition after 2008 are deemed responsible for the gradual rise of corporate leverage ratios in these economies.

Hence, corporate capital structure is determined not only by corporate tax rate, cost of financial distress and other variables directly associated with those two, but also by many other firm specific variables, industry characteristics and some macro-economic factors. Many studies to date have identified the determinants of capital structure. But most of the studies have focused on the sampled corporations from specific economies and/or industry sectors. For example, Shahzad et al. (2021) focused on countries under SAARC; Deesomsak et al. (2004) studied companies from selected countries from South Asia and Australia; Bas et al. (2009) studied companies from 25 developing countries of 5 regions across the world; Kahya et al. (2020) made a comparison between developed and developing, and Islamic and non-Islamic countries. Agarwal and Nagarajan (1990), Graham and Harvey (2001) and Fan et al. (2010) focused only on US companies. Köksal and Orman (2015) focused on non-financial firms from Turkey. Psillaki and Daskalakis (2009) delved into the determinants of capital structure of small and medium enterprises (SMEs) in some selected European economies. Results of these studies are diverse. In few instances the results converge and support the theories of capital structure. But by and large they contradict with each other and often deviates from the theories of capital structure. Some review studies such as Shahar and Manja (2018) and Sibindi (2016), have tried to compile the findings of other empirical studies to deduct a wholesome list of the determinants of capital structure. Both of these studies concluded that none of the theories unanimously explains the capital structure choices and their empirical determinants.

In the context of Bangladesh, research papers focusing on the determinants of capital structure have focused mostly on companies listed in Dhaka Stock Exchange. However, the mean leverage ratios (debt to total asset) found by different researchers varied. Both K. M. Z. Islam et al. (2016) and Imtiaz et al. (2016) focused on the listed pharmaceutical companies in Dhaka covered coinciding time 2008-2012 and 2009-20013 respectively. But the results varied significantly. The first one found a mean leverage ratio of 48% and a range between 109% and 8%, whereas the second one found the mean to be only 26% and the range between 69% and 2.5%. Other studies such as M. F. Hossain and Ali (2012) and Alom (2013) covering all non-financial firms listed in DSE and sample periods 2003-2007 and 2004-2011 respectively derive same mean leverage ratio of 60%. For both the studies, the ratio ranges between 360% and 0.15%. Another study by Rouf (2015) focusing on similar sample firms covering period 2008-2011 depict significantly different leverage ratios. It is important to note that neither of the aforementioned studies, nor any later studies have thrived to explain the differing results. Moreover, Bangladesh is a growing economy with an emerging financial system. Government is thriving to facilitate foreign investment both in the form of equity and debt and offering various non-interest tax breaks and subsidies to promote the growth of businesses in thrust sectors. So, it is not unlikely that corporations in Bangladesh have different leverage ratio and its determinants compared to its peers. Through desk research, the researcher of this study could identify only one study that compared capital structure of Bangladeshi corporations with those of other countries. Shahzad et al. (2021) revealed that although Bangladeshi firms have comparable leverage ratio with their peers in other SAARC countries, they have the highest average short-term debt ratio and lowest average long-term debt ratio. Which means short term borrowing is prevalent in Bangladesh. Hence, there is a scholastic need and practical reasons for a review of the literature on capital structure and its determinants in the context of Bangladesh. This review work will pinpoint the difference in the findings and thrive for explaining the differences in the results with insights from capital structure theories.

#### 4. FINDINGS AND ANALYSIS

This section summarizes the major findings from our review of the 14 empirical papers on the determinants of capital structure of the companies in Bangladesh. First, the context of the studies are reviewed which includes the time period covered and industry classification of the sampled companies; second, the used measures/ proxies of capital structure are identified; third, the determinants (independent and control variables) considered in the study and their proxy measurements are identified; fourth, the data analysis techniques employed in the studies are summarized; and finally, the results of the studies are reviewed and analyzed in light of the capital structure theories.

##### 4.1 Context of the Studies

Table 2 presents the contexts of the studies taken for review in this study. All studies covered companies listed in Dhaka Stock Exchange (DSE). Most of the studies (6 out of 14) did not focus any particular industry. Four of them took both service and manufacturing sector companies, whereas two studies focused only on the manufacturing companies listed in DSE. Of the rest, two papers took only textile manufacturing companies, four covered only pharmaceutical manufacturers and one study focused on private commercial banks and one on the nonbank financial institutions. Number of sampled companies ranges between 8 and 101. Time period covered ranges from

2002 to 2017, but different studies covered different smaller periods within this broad range.

#### 4.2 Proxies of Capital Structure

Researchers have used different accounting ratios as the proxy of capital structure. Total debt to total asset (TD/TA) is the most widely used proxy. Five of the sampled paper used this ratio to measure capital structure. Total debt to total equity (TD/TE) is another common measure of capital structure. Three of papers reviewed for this study used this ratio. Two papers used long term debt to total asset ratio (LTD/TA) besides the TD/TA ratio. The rest four papers used three measures of capital structure i.e., TD/TA, LTD/TA, and short-term debt to total asset (STD/TA). Some literature suggests using market value ratios, which implies taking the market value of debt and equity while calculating the ratios stated above. But determining market value of debt is not possible unless there is a vibrant bond market. Determination of market value of equity though easy for publicly listed companies, it is highly volatile. In case of non-listed companies estimating market value of equity is very much subjective. Perhaps the above are the reasons for which all the empirical papers reviewed for this study used book value ratios. Hence the results of the sampled papers are comparable.

Industry focus	Authors	Sample size	Sample period
Non-financial companies listed in DSE	Alom (2013)	44	2004-11
	Haque et al. (2011)	101	2004-05
	M. F. Hossain and Ali (2012)	39	2003-07
	Shahzad et al. (2021)	3391 firm years from 4 stock exchanges in Bangladesh, India, Pakistan, and Sri Lanka	2009-14
Manufacturing companies listed in DSE	Md. I. Hossain and Hossain (2015)	74	2002-11
	Islam (2016) R. Islam (2016)	63	2008-12
Textile Manufacturing Companies listed DSE	Jahan (2014)	9	2008-12
	Ullah et al. (2017)	19	2010-15
Pharmaceutical Companies listed in DSE	Lima (2009)	17	2004-08
	Hossin and Mia (2020)	10	2013-17
	Intiaz et al. (2016)	8	2009-13
DSE listed private commercial banks	K. M. Z. Islam et al. (2016)	20	2008-13
Non- bank financial institutions	Pervin and Nowreen (2018)	30	2007-16
	Siddiqui (2012)	24	2006-08

**Table 2: Contexts of the studies**

#### 4.3 Determinants Considered

Major determinants considered by the sampled research papers can be divided into two broad categories. First category comprises of the firm specific factors. Firm profitability, size, asset tangibility, liquidity, growth, earnings volatility, agency cost etc. Table 4 presents a list of the firm specific determinants. Column 2 of Table 4 presents the measurement or proxy of the determinants and column 3 presents the number of studies that investigated the influence of the determinant on capital structure. It's evident from Table 4 that tangibility, size, growth opportunity, profitability, and liquidity are the most widely tested determinants followed by managerial ownership, non-debt tax shield, debt-service coverage ratio and age of the firm.

Proxies of capital structure	No. of papers
Total debt to total asset ratio (TD/TA)	5
Total debt to total asset ratio (TD/TA)	2
Long term debt to asset ratio (LTD/TA)	
Total debt to total asset ratio (TD/TA)	4
Long term debt to asset ratio (LTD/TA)	
Shrot term debt to asset ratio (STD/TA)	
Debt to equity ratio (TD/TE)	3

**Table 3: Proxies of capital structure**

Determinants	Measure	N	Results			
			Sig + ve	Sig -ve	Mixed	Non sig
Size	Total asset or Total revenue	11	2	0	4	5
Tangibility	Tangible asset/Total asset	14	2	3	5	4
Managerial Ownership or Agency cost	% Of ownership by top management	5	1	2	2	0

Determinants	Measure	N	Results			
			Sig + ve	Sig -ve	Mixed	Non sig
Growth Opportunity or Asset growth rate	Market to book ratio	11	2	0	7	2
Profitability	Return on Asset	13	1	7	4	1
Non-debt Tax Shield	Depreciation tax shield	5	1	0	4	0
Liquidity	Current ratio	11	0	3	6	2
Earning Volatility	Standard deviation of earning	2	0	0	0	2
Dividend Payment	Pay-out ratio	2	0	0	1	1
Debt-service Coverage Ratio	Interest coverage ratio	5	1	0	2	2
Financial Cost	Cost of fund	2	0	1	0	1
Free Cash Flow to Firm	Free cash flow	1	0	0	1	0
Operating Leverage	Fixed cost/ Total cost	3	1	1	0	1
Bankruptcy Risk	Altman's Z-score	1	0	1	0	0
Tax	Tax paid over a period	2	0	0	1	1
Age	No. of years since inception	4	0	0	2	2
Sales growth	Change in sales in a year/last year's sales	1	0	1	0	0
Business Risk	Subjective scoring	1	1	0	0	0
Dividend Dummy		1	0	0	0	1
d_cem		1	0	0	0	1
d_food		2	0	0	1	1
d_tex		1	0	0	1	0
d_pharma		2	0	0	1	1
d_fuel		1	0	0	0	1
d_jute		1	0	0	0	1
d_cosmetic		1	1	0	0	0
d_IT		1	0	1	0	0

**Table 4: Firm specific determinants considered in the studies**

Few researchers tested the influence of earnings volatility, dividend payment, operating leverage, bankruptcy risk, business risk, tax, and cost of fund. A few studies used industry dummy to test if the capital structure and its determinants vary across industry sectors. Major industry sectors considered by the researchers are food, pharmaceuticals, cement, textile, fuel, jute, cosmetics, and IT.

Macro determinants	N	Result	
		Positive	Negative
GDP Growth Rate	2	1	1
Inflation	1	0	1
Interest	1	0	1
Country governance index	1	0	1
Stock market development	1	0	1

**Table 5: Macro determinants considered in the studies**

Three of the sample research works namely K. M. Z. Islam et al. (2016), Shahzad et al. (2021) and Hoque et al. (2011) incorporated some macro factors as the determinant of firm capital structure. Table 5 presents a list of the macro factors tested by these studies. Column 2 of Table 5 presents the number of studies testing the influence of the corresponding macro factor on capital structure. The macro factors tested are GDP growth rate, inflation, interest rate, country governance index and stock market development.

#### 4.4 Data Analysis Tools Employed

All the studies reviewed for this paper used correlation analysis and multiple regression analysis to estimate the influence of the determinants on capital structure. However, depending on the characteristics of the data set i.e., sample size, autocorrelation, heteroscedasticity, normality etc. the researchers chose appropriate type of analysis tool. Most of the authors namely Lima (2009), Hoque et al. (2011), Ullah et al. (2017), Hossain and Mia (2020) and Pervin and Nowreen (2018) used Pearson correlation analysis and ordinary least square (OLS) regression. Others such as M. F. Hossain and Ali (2012), K. M. Z. Islam et al. (2016), Alom (2013) and Jahan (2014) carried out pooled regression on the panel data. First two papers tested both fixed effect and random effect model whereas the latter two tested only fixed effect model. R. Islam (2016) and Siddiqui (2012) used feasible generalized least square (FGLS) regression instead of OLS besides Pearson's correlation analysis. Md. I. Hossain and Hossain (2015) and Intiaz et al. (2016) applied panel corrected standard error (PCSE) regression model. Md. I. Hossain and Hossain

(2015) also used random effect Tobit regression. Shahzad et al. (2021) used generalized method of moments (GMM) and seemingly unrelated regression (SUR) models.

#### 4.5 Results of the Studies

As mentioned before the empirical research papers reviewed for this study have tested the influence of many firm-specific and macro variables on firm capital structure. Table 6 presents the major findings of each of the empirical studies reviewed for this research.

The frequency distribution of the tested determinants and their direction of relationship (positive or negative) and significance of the relationship presented in Table 4 depicts an overview of the findings in aggregate. If we take the modal impact for a particular variable as the representative impact of that variable on capital structure, it is evident from Table 4 that many variables such as tangibility, growth opportunity, non-debt tax shield, liquidity and debt service coverage ratio demonstrate mixed influence on capital structure. Mixed influence entails different outcome with different measure of capital structure. For example, significant positive association with LTD/TA ratio but non-significant association with TD/TA and/or negative association with STD/TA. Business risk show significant positive influence on capital structure; whereas, managerial ownership, profitability, bankruptcy risk and sales growth depict significant negative influence and size portray non-significant influence on capital structure. For the variables like, dividend payment, debt-service coverage, financing cost, tax, and age, half of the studies show significant negative association and the rest show non-significant influence. In case of operating leverage, the results are equally distributed among significant positive, significant negative and non-significant association.

No.	Author(s)	Major Findings
1	Alom (2013)	Leverage ratios are significantly different across Bangladeshi industries. Profitability, collateral, liquidity, and market to book are significant determinants of capital structure. However, dividend payment and size are not significant explanatory determinants for leverage.
2	Md. I. Hossain and Hossain (2015)	All the selected variables namely Managerial ownership (positive), growth rate, profitability, debt service coverage ratio, non-debt tax shield, financial cost, free cash flow to firm, agency cost and dividend payment (negative), tangibility, liquidity, industry dummy, dividend dummy are significant determinants of capital structure of the listed manufacturing companies of Bangladesh. Capital structure of various industries of Bangladesh differs significantly from each other.
3	Lima (2009)	All the six variables, managerial ownership, growth rate, operating leverage, bankruptcy risk, tangibility, and debt service capacity are significant determinants of Capital Structure. Companies prefer debt financing to get tax shield benefit until marginal cost of debt exceeds marginal benefit of debt. Companies with higher growth have higher demand for fund and (cet. par.) a greater reliance on external financing through the preferred source of debt. Higher fixed cost operation acts as a negotiable instrument for long term borrowing. Tangibility, bankruptcy risk, and debt service capacity also serve as significant determinants of capital structure for pharmaceutical companies of Bangladesh.
4	Jahan (2014)	Tangibility and Profitability are significant determinants for total debt ratio.
5	R. Islam (2016)	No significant relation was found for long term leverage because firms tend to take debt or equity depending in its unique firm specific benefits produced by each alternative. Most of the listed companies of Bangladesh prefer short term debt to long term debt as sources of fund. Low default risk and less agency cost support the use of short-term debt than long term debt as a source of fund. Short run debt can open a new window for less or underdeveloped countries.
6	Ullah et al. (2017)	Liquidity is a significant factor for short term, long term, and total debt ratio for textile companies in Bangladesh. Some factors working on firm's capital structure in other countries also work in a similar fashion in Bangladesh.
7	Hossin and Mia (2020)	Profitability, tangibility of assets, growth and non-debt tax shield have significant association with capital structure. Profitability, tangibility, and non-debt tax shield are significant determinants for capital structure of pharmaceutical and chemical sector. Whereas tangibility, size and growth are significant determinants for that of tannery sector. However, only profitability acts as a significant determinant for the sectors together. In Bangladesh most of the firms prefer internal funds over external financing.

No.	Author(s)	Major Findings
8	Imtiaz et al. (2016)	Tangibility, profitability, and operating leverage were statistically significant determinants of capital structure. Whereas size, growth and liquidity were not.
9	Pervin and Nowreen (2018)	Profitability and size have significant negative relation whereas risk has significant positive relation with capital structure of banking sector. Liquidity, age, tangibility, and asset growth demonstrate no significant impact on the capital structure of banking sector in Bangladesh. The results are consistent with much international evidence on this issue. Profitable firms generally have less amount of leverage. Profitable firms can finance their growth internally by using retained earnings. Less profitable firms may not have such alternatives that may force them to go for debt financing. With the increase in total assets, dependence on leverage will be lower. Due to fluctuation in profitability banks may face risk that may lead them to finance more with leverage.
10	Siddiqui (2012)	Most of the results are consistent with the previous results except debt service coverage and profitability ratio. Debt service coverage ratio, liquidity ratio, growth rate, operating leverage, firm size, and age have significant influences on the leverage structure chosen by NBFIs in Bangladesh.
11	M. F. Hossain and Ali (2012)	Profitability, tangibility, liquidity, and managerial ownership have significant negative relations with leverage. Growth and non-debt tax shield are positively and significantly related with leverage. Leverage ratios significantly differ across Bangladeshi industries. Overall, the results are almost consistent with previous study and capital structure.
12	Haque et al. (2011)	Regression coefficient of CGI is negative and significant. Ownership concentration is significantly positive. Poor corporate governance and associated weak shareholder rights are linked with higher debt finance. The controlling shareholders of poorly governed family-controlled firms tend to exert direct or indirect influence in the firm's financing decisions, as this is in their own interest, and this results in reduced rights for minority shareholder. These controlling shareholders want to preserve authority and informational advantage by choosing readily available bank debt toward meeting the firm's financing needs, while retaining or increasing ownership or control.
13	Shahzad et al. (2021)	Significant relationships exist between tangibility, profitability, liquidity, firm size, stock market development, economic growth, and firm leverage. Statistics show interesting differences in firm characteristics across four countries: firms in Bangladesh have the highest STD but the lowest LTD. Indian firms are largest in Size and most profitable. Firms in Sri Lanka are the most liquid and possess highest growth opportunities. Study shows mixed results regarding firm size and leverage. Macroeconomic variables are also found to have significant impact on firm leverage. Particularly, high stock market capitalization/GDP and GDP (real) growth rate are negatively related to debt ratios.
14	K. M. Z. Islam et al. (2016)	Profitability, liquidity and growth opportunities in total assets, inflation, interest rates and stock market developments- seem to play pivotal role in determining the capital structure decisions of selected Bangladeshi pharmaceutical firms. Both firm specific and macroeconomic conditions effect on firm's capital structure.

**Table 6: Major findings of the studies covered**

#### **4.6 Analysis of the Findings in terms of the Existing Capital Structure Theories**

Many studies intended to find out appropriate capital structure theory that can suggest optimal capital structure for Bangladeshi companies by comparing empirical results with the theoretical projected relationships of the corporate factors with leverage. Table 7 depicts the relation that are expected to be followed by various capital structure determinants according to different capital structure theories, e.g., agency, static trade-off, Pecking order and signaling theory.

Determinants	Expected Signs			
	Agency Theory (AT)	Trade-off Theory (TOT)	Pecking Order Theory (POT)	Signaling Theory (ST)
Size	+	+	-	+
Tangibility	+	+	-	
Managerial Ownership or Agency cost	-	-	+	
Growth Opportunity or Asset growth rate	-	-	+	+
Profitability		+	-	+
Non-debt Tax Shield		-		
Liquidity		+	-	
Earning Volatility		-		
Dividend Payment			+	-
Debt-service Coverage Ratio	+	+	-	
Financial Cost		-		
Free Cash Flow to Firm			-	
Operating Leverage	-	-	-	
Bankruptcy Risk	-	-	-	
Tax		+		
Age			-	

**Table 7: Theoretically expected directional relationship between firm specific factors and CS**

Table 8 represents the empirically obtained significant association between selected determinants and firm leverage as well as consistent theories based on the relationship. As an instance, Alom (2013), in his study on 44 DSE listed companies observed that capital structure of those companies has reverse association with profitability, liquidity, and tangibility and hence, is consistent with POT. On the other hand, asset growth rate has direct relationship with total debt to total asset ratio following signaling theory. Many researchers obtained consistency with multiple theories for the same micro-level factors while measures of capital structure vary. For example, Md. I. Hossain and Hossain (2015) detected that the relationship between tangibility and TD/TA of 74 DSE listed companies in 8 industries is consistent with POT. However, the relationship between tangibility and capital structure, when long term debt to asset and short-term debt to asset are used as the measure of capital structure, suggests the implication of agency and static trade-off theory.

Hence, it is evident from Table 8 that capital structure of Bangladeshi firms follows commonly almost all these four theories namely: Agency theory (AT), Statis Trade-off theory (TOT), Pecking order theory (POT), and Signaling theory (ST). However, majority of the determinants are found to maintain such relationship with capital structure that support Pecking order theory, which states that a company goes through a specific hierarchy of securities for financing its business. Trade-off theory and Agency theory stand next. The least consistency is found with Signaling theory.

No.	Author	Significant Determinant	Capital Structure Measure			Supported Theory/Theories (in Sequence)
1	Alom (2013)	Profitability	TD/TA			POT
		Liquidity	-			POT
		Tangibility (Collateral)	-			POT
		Asset Growth Rate	+			ST
2	Md. I. Hossain and Hossain (2015)	Tangibility	-	+	+	POT/AT, TOT/ AT, TOT
		Profitability			-	POT
		Managerial Ownership	+	+		POT/POT
		Asset Growth Rate	-	-		AT, TOT/AT, TOT
		Non-debt Tax Shield	-		-	TOT/TOT
		Liquidity	-	+	-	POT/TOT/POT
		Dividend Payment	-		-	ST/ST
		Debt Service Coverage Ratio	-			POT
		Free Cash Flow to Firm	-		-	POT/POT
Financial Cost	-	-	-	TOT/TOT/TOT		



No.	Author	Significant Determinant	Capital Structure Measure			Supported Theory/Theories (in Sequence)
3	Lima (2009)		TD/TA			
		Tangibility		+		AT, TOT
		Asset Growth Rate		+		POT, ST
		Operating Leverage		+		None
		Bankruptcy Risk		-		AT, TOT, POT
		Debt Service Coverage Ratio		+	AT, TOT	
4	Jahan (2014)		TD/TA			
		Tangibility		+		AT, TOT
		Profitability		+		TOT, ST
5	R. Islam (2016)		TD/TA	LTD/TA		
		Tangibility	-			POT
		Profitability	-	-		POT/POT
		Size	-			POT
		Asset Growth Rate	+			POT, ST
		Tax	-			None
		Liquidity	-		POT	
6	Ullah et al. (2017)		TD/TA	LTD/TA	STD/TA	
		Tangibility	-	-		POT/ POT
		Profitability		+	-	TOT, ST/POT
		Asset Growth Rate			+	POT, ST
		Age			-	POT
		Liquidity	-	+	POT/POT/TOT	
7	Hossin and Mia (2020)		TD/TE (Pharmaceutical)	TD/TE (Tannery)	TD/TE (Combined)	
		Tangibility	-	-		POT/ POT
		Profitability	-		-	POT/POT
		Size		+		AT, TOT, ST
		Non-Debt Tax Shield	+			None
		Asset Growth Rate		-	AT, TOT	
8	Imtiaz et al. (2016)		TD/TE			
		Tangibility		-		POT
		Operating Leverage		-		AT, TOT, POT
		Profitability		-	POT	
9	Pervin and Nowreen (2018)		TD/TA			
		Profitability		-		POT
10	Siddiqui (2012)		TD/TA	LTD/TA	STD/TA	
		Size	+	+	+	AT, TOT, ST/ AT, TOT, ST/ AT, TOT, ST
		Asset Growth Rate	+		+	POT, ST/ POT, ST
		Liquidity	-	+	-	POT/TOT/POT
		Age			-	POT
		Operating Leverage	-	-		AT, TOT, POT/ AT, TOT, POT
		Debt Service Coverage Ratio	-	-	POT/POT	
11	M. F. Hossain and Ali (2012)		TD/TA			
		Tangibility		-		POT
		Profitability		-		POT
		Managerial Ownership		-		AT, TOT
		Non-debt Tax Shield		+		None
		Liquidity		-	POT	

No.	Author	Significant Determinant	Capital Structure Measure			Supported Theory/Theories (in Sequence)
			TD/TA	LTD/TA		
12	Haque et al. (2011)	Profitability	-	-		POT/POT
		Size	+	+		AT, TOT, ST/ AT, TOT, ST
		Asset Growth Rate	+			POT, ST
		Non-Debt Tax Shield	-	-		TOT/TOT
			TD/TA	LTD/TA	STD/TA	
13	Shahzad et al. (2021)	Tangibility	-	+	-	POT/AT, TOT, ST/AT, POT
		Profitability	-	-	-	POT/POT/POT
		Size		+	-	AT, TOT, ST/POT
		Liquidity	-		-	POT/POT
				TD/TA		
14	K. M. Z. Islam et al. (2016)	Tangibility		-		POT
		Profitability		-		POT
		Liquidity		-		POT

**Table 8: Relationship of the determinants with CS following empirical results**

## 5. CONCLUSION

This study is a review work on the capital structure determinants of companies in an emerging economy, Bangladesh. Capital structure decision is crucial for a firm since it has direct implication on firm value and share price. Nevertheless, an ideal capital structure composition of a firm is subject to frequently altering firm and macro-specific factors in which the firm operates. The fact that no universal theory fully explains optimal debt-equity composition, adds more complexity to capital structure choice. Hence, a review work on the determinants of capital structure in Bangladesh will pave the way for investors, financial managers, business owners and other stakeholders to comprehend the choice of capital structure adopted in different circumstances by various industries in an emerging economy. In addition, such a research work will facilitate the researchers to explore more about capital structure in emerging economies.

For this study, mainly, 14 articles that investigated determinants of capital structure on Bangladeshi companies are chosen as sample papers. The sample papers focused mostly on DSE listed companies in different sectors including manufacturing, textile, pharmaceutical, private commercial banks, non-financial companies etc. One of the articles studied non-bank financial institutions as well. The studies covered different time periods in different windows, the earliest starting from 2002 to the latest up to 2017. Different authors used different proxies for capital structure while some used a combination of different measures. Largely, total debt to total asset is used as proxy along with long term debt to asset, short term debt to asset and debt to equity.

Various firm specific factors are considered by the researchers while macro factors are rarely observed. Almost all the papers used tangibility (14) and profitability (13) as a determinant of capital structure among which, ten and twelve studies found significant results respectively. The next widely used determinants are growth opportunity (significant in 9), liquidity (significant in 9), and size (significant in 6) used by eleven articles. Apart from these factors, managerial ownership or agency cost, non-debt tax shield, and debt service coverage ratio, operating leverage, tax etc. are also used as firm specific factors determining capital structure choice by several research works. Only three studies used macro-level factors namely GDP growth rate, inflation, interest, country governance index and stock market development. Country specific factors seem to lower the adoption of debt as economy grows with higher levels of inflation and interest rate along with improvement of country governance index and stock market. Rarely, firm borrows more as GDP growth rate increases.

Pearson correlation analysis and many regression models like pooled ordinary least square, feasible generalized least square, panel corrected standard error were employed as data analysis techniques by several researchers. Moreover, Tobit, generalized method of moments and seemingly unrelated regression were also used by some. Ostensibly, many variables such as tangibility, growth opportunity, non-debt tax shield, liquidity and debt service coverage ratio demonstrate mixed influence on capital structure implicating different outcome with different measure of capital structure.

The relationship between capital structure determinants of Bangladeshi companies and firm leverage are observed to be consistent with Pecking order theory in majority of the cases. This association is consistent with the other theories such as Static Trade-off theory, Agency theory and Signaling theory as well in some cases, but to a lesser extent. The study provides a framework for analyzing the findings of empirical research and recommends managers and investors to monitor the key determining factors of firm leverage like tangibility, profitability, asset

growth rate, liquidity, and size to identify probable changes in capital structure and thus, the value of the company. This review work focuses only on Bangladeshi companies for selecting samples to study capital structure in emerging economies. It could be better if more countries from emerging economies could be chosen, and the determinants of capital structure of Bangladeshi firms could be compared with those of other developed and developing countries. Thus, this work paves the way for further research exertion on capital structure.

### Works Citation

- Agrawal, A., & Nagarajan, N. J. (1990). Corporate capital structure, agency costs, and ownership control: The case of all-equity firms. *The Journal of Finance*, 45(4), 1325–1332.  
<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-6261.1990.tb02441.x>
- Alom, K. (2013). Capital structure choice of Bangladeshi firms: An empirical investigation. *Asian Journal of Finance & Accounting*, 5(1), 320. <https://doi.org/10.5296/ajfa.v5i1.3495>
- Alter, A., & Elekdag, S. (2020). Emerging market corporate leverage and global financial conditions. *Journal of Corporate Finance*, 62, 101590. <https://doi.org/10.1016/J.JCORPFIN.2020.101590>
- Bas, T., Muradoglu, G., & Phylaktis, K. (2009). Determinants of capital structure in developing countries. *Cass Business School, London EC1Y 8TZ, UK*.
- Deesomsak, R., Paudyal, K., & Pescetto, G. (2004). The determinants of capital structure: Evidence from the Asia Pacific region. *Journal of Multinational Financial Management*, 14(4–5), 387–405.  
<https://doi.org/10.1016/j.muln.2004.03.001>
- Fan, J. P. H., Titman, S., & Twite, G. (2012). An international comparison of capital structure and debt maturity choices. *Journal of Financial and Quantitative Economics*, 47(1), 23–56.  
<http://www.nber.org/papers/w16445>
- Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics*, 60(2–3), 187–243. <http://www.duke.edu/~charvey/Research/indexr.htm>.
- Haque, F., Arun, T. G., & Kirkpatrick, C. (2011). Corporate governance and capital structure in developing countries: A case study of Bangladesh. *Applied Economics*, 43(6), 673–681.  
<https://doi.org/10.1080/00036840802599909>
- Hossain, M. F., & Ali, Md. A. (2012). Impact of Firm Specific Factors on Capital Structure Decision: An Empirical Study of Bangladeshi Companies. *International Journal of Business Research and Management (IJBRM)*, 3(4), 163–182. <https://www.researchgate.net/publication/341793666>
- Hossain, Md. I., & Hossain, Md. A. (2015). Determinants of capital structure and testing of theories: A study on the listed manufacturing companies in Bangladesh. *International Journal of Economics and Finance*, 7(4), 176–190. <https://doi.org/10.5539/ijef.v7n4p176>
- Hossain, Md. S., & Mia, S. (2020). Determinants of capital structure: A study on some selected corporate firms in Bangladesh. *International Journal of Economics and Financial Research*, 6(6), 111–120.  
<https://doi.org/10.32861/ijefr.66.111.120>
- Imtiaz, Md. F., Mahmud, K., & Mallik, A. (2016). Determinants of capital structure and testing of applicable theories: Evidence from pharmaceutical firms of Bangladesh. *International Journal of Economics and Finance*, 8(3), 23. <https://doi.org/10.5539/ijef.v8n3p23>
- Islam, K. M. Z., Sharif, M. I., & Hoque, Md. N. (2016). Firm-specific and macroeconomic determinants of capital structure: Evidence from pharmaceutical industry in Bangladesh. *Business Review*, 11(1), 43–57.  
<https://doi.org/10.35649/kubr.2016.11.12.4>
- Islam, R. (2016). Determinants of capital structure choices for listed manufacturing companies in Bangladesh. *Research Journal of Finance and Accounting*, 7(7), 44–55. [www.iiste.org](http://www.iiste.org)
- Jahan, N. (2014). Determinants of capital structure of listed textile enterprises of Bangladesh. *Research Journal of Finance and Accounting*, 5(20), 11–21. <https://www.researchgate.net/publication/328355703>
- Kahya, E. H., Ersen, H. Y., Ekinici, C., Taş, O., & Simsek, K. D. (2020). Determinants of capital structure for firms in an Islamic equity index: Comparing developed and developing countries. *Journal of Capital Markets Studies*, 4(2), 167–191. <https://doi.org/10.1108/jcms-07-2020-0023>
- Köksal, B., & Orman, C. (2015). Determinants of capital structure: Evidence from a major developing economy. *Small Business Economics*, 44(2), 255–282. <https://doi.org/10.1007/sl>
- Lima, M. (2009). An insight into the capital structure determinants of the pharmaceutical companies in Bangladesh. *In GBMF Conference*, 1–17.
- Manciaracina, V. (2021, April 8). *Leverage, Risk, and Return in Europe: An Analysis of the Last 20 Years*. FactSet. [https://go.factset.com/about-our-company?\\_gl=1\\*k9fcpz\\*\\_ga\\*MTQyMzEwNzg4MS4xNjY0NzY0MzY0MDQ4\\*\\_ga\\_2Q3PTT96M8\\*MTY2NDczNDA0OC4xLjEuMTY2NDczNDQwMC4wLjAuMA.&\\_ga=2.199698599.882022333.1664734048-1423107881.1664734048](https://go.factset.com/about-our-company?_gl=1*k9fcpz*_ga*MTQyMzEwNzg4MS4xNjY0NzY0MzY0MDQ4*_ga_2Q3PTT96M8*MTY2NDczNDA0OC4xLjEuMTY2NDczNDQwMC4wLjAuMA.&_ga=2.199698599.882022333.1664734048-1423107881.1664734048)

- Pervin, R., & Nowreen, R. (2018). Determinants of capital structure of commercial banks in Bangladesh listed in the Dhaka stock exchange limited. *ASA University Review*, 12(1), 85–97.
- Psillaki, M., & Daskalakis, N. (2009). Are the determinants of capital structure country or firm specific? *Small Business Economics*, 33(3), 319–333. <https://doi.org/10.1007/s11187-008-9103-4>
- Ross, S., Westerfield, R., Jaffe, J., Jordan, B., & Kakani, R. K. (2021). Corporate Finance. In *McGraw–Hill Primis* (12th ed.). McGrawHill Education (India) Pvt. Ltd.
- Rouf, Md. A. (2015). Capital structure and firm performance of listed non-financial companies in Bangladesh. *The International Journal of Applied Economics and Finance*, 9(1), 25–32. <https://doi.org/10.3923/ijaef.2015.25.32>
- Shahar, W. S. S. B., & Manja, S. I. (2018). Determinants of capital structure. *Reports on Economics and Finance*, 4(3), 139–149. <https://doi.org/10.12988/ref.2018.8113>
- Shahzad, A., Azeem, M., Nazir, M. S., Vo, X. V., & Linh, N. T. M. (2021). The determinants of capital structure: Evidence from SAARC countries. *International Journal of Finance and Economics*, 26(4), 6471–6487. <https://doi.org/10.1002/ijfe.2132>
- Sibindi, A. B. (2016). Determinants of capital structure: A literature review. *Risk Governance & Control: Financial Markets & Institutions*, 6(4), 227–237.
- Siddiqui, S. S. (2012). Capital structure determinants of non-bank financial institutions (NBFIs) in Bangladesh. *World Review of Business Research*, 2(1), 60–78.
- Statista. (2022, April 28). *Ratio of total debt to equity in the United States from 1st quarter 2012 to 2nd quarter 2021*. Statista Research Department. <https://www.statista.com/statistics/248260/total-debt-to-equity-ratio-in-the-united-states/>
- Ullah, G. M. W., Uddin, M. M., Abdullah, M., & Islam, Md. N. (2017). Determinants of capital structure and its impact on the debt maturity of the textile industry of Bangladesh. *Journal of Business and Economic Development*, 2(1), 31–37. <https://doi.org/10.11648/j.jbed.20170201.14>