



The Determinants of Capital Structure Choice: Evidence from Bangladeshi FMCG Companies

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Authors' contributions

This work was carried out in collaboration between both authors. Author KKK designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author ANK managed the analyses of the study, managed the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

This paper offers empirical proof of Bangladesh's theories of capital markets and analyses the effects of the failure to introduce a secondary capital market in relation to Bangladesh. The findings from the cross-sectional OLS regression demonstrate that both the static deal theory and the cost theory of the organisation are applicable to the capital structure of the Bangladesh Fast-moving consumer goods (FMCG) companies. The lack of a secondary market will affect the costs of an entity because shareholders unable to decommission their shares may place pressure on management to behave in their best interests. We analyse in this paper, using a sample of 5 Bangladeshi FMCG companies for the period from 2014 to 2019, the determinants of Bangladesh's Debt to Total Asset. This study reveals that Bangladesh's listed Food and Allied company's average leverage ratio is close to that of other countries in the growth of the economy. The study also shows that the Company's Profitability is strongly and positively linked to the asset structure, Size, Profitability, growth and business risks. A firm's Size has a statistically significant negative impact on Debt to Total Asset.

Keywords: FMCG Company; OLS regression; Average Leverage Ratio; Debt to Total Asset.

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1. INTRODUCTION

Corporate finance decision is one of Financial Management's most critical decisions because these decisions directly impact the value of shareholders. Thus, one of the key goals of the financial manager is to ensure that the capital expense is smaller to increase the business value [1]. The aim of the financial manager is to find the best corporate capital structure to allow the organisation to fulfil its financial (current and future expectations) requirements [2]. After financial managers recognise the determinants of capital structure, the goal of optimising firm value can be accomplished. Capital structure means the way in which a company is funding its overall assets, activities and development by issuing equity, Debt and hybrid securities. Financing is a process of collecting money through some sources to be used on purchasing or sustain total assets, current operations of the firm and any expected growth [1]. Equity comes from selling common stocks, preferred stocks and retained earnings, while Debt can be divided into long term debt, e.g. long term note payable, shares, debenture and short term debt, i.e. short term bank loan, account payable. Besides these sources of finance, firms issue some hybrid securities which possess the characteristics of both equity and Debt such as income bond. Equity sources that make up the equity portion of the structure of capital vary widely. The primary source of equity is common stock. Popular shareholders are also investors who purchase similar stocks. Usually, the corporation pays dividends to the shareholders if it receives net profits. There is no consistency of common stocks. Popular shareholders have the right to vote so that they are in charge of the Company to elect the firm's management board. The common shareholder is entitled to residual value in the event of liquidation following reimbursement by creditors and preferred shareholders. From the above debate, we can infer that ordinary stocks do not have a fixed income, and maturity means that they can be exchanged over the counter market in secondary markets, i.e. stock exchanges. In a business with more claims of the total assets and net earnings than the common stock, preferred stocks may be identified as categories of ownership. At the end of the cycle, the preferred stock typically has a fixed dividend, regardless of whether the business makes a net profit or not. Preferred stock can be considered to be a hybrid asset, as it does not have maturity property characteristics of equity and fixed debt income securities.

Contrary to common stockholders, preferred stockholders have no voting authority to nominate directors. The third major component of capital structure equity is the retained earnings. The benefit retained applies to the net income part that the corporation reinvests. The retained income raises the shareholder interest because it is considered a valuable shareholder property. Debt is the amount lent by the Company to fund the Company by debt instruments. Corporations typically pay interest on loans, e.g. yearly, semester, quarterly etc., at the end of each year. Interest is business debt burden and creditors' fixed income burden. Debt is mature, which refers to when existing Debt, such as a 10-year bond, bond for 20 years, etc., remains unpaid. Debt may be graded as long-run Debt and short-run Debt. Shorter Debt is borrowing by businesses which have a maturity of one year or less such as a bank loan, a T-bill, etc., while long-term Debt is the Debt existing, for example, mortgage, debenture, mortgage, etc. for more than one year. Liabilities may also be defined as insured and unsecured Debt. Secured Debt shall be lent as insurance in the event of financial distress, such as loans, for certain Company's properties. Uninsured indebtedness is investing without any business collateral such as bills and debentures [3]. Hybrid securities are various types of securities which have equity and debt characteristics, i.e. convertible bond, earnings bond. Convertible bonds are bonds which can be exchanged before maturity and any price changes in the securities affect convertible bonds. Revenue bonds are fixed maturity, but interest is charged if the Company receives enough. We consider hybrid securities to be Debt, as they have characteristics of both a fixed and a fixed maturity income. Leverage means a debt ratio of the Company's overall funding. The arrangement of capital varies from Company to business depending on the needs of a firm. The varying funding practices of businesses pose the question of why some organisation use more leverage, and others use less to no capital leverage. What motivates managers to exploit precisely? Is it possible to increase the equity of corporations or stockholders if the Debt is kept in the capital structure? The two common proposals of Modigliani and Millers (M&M) could be addressed those crucial questions. Proposal-I of M&M assumes that the Debt would not have an effect on the valuation of a business, but that no tax, a perfect capital market, transaction costs, financial distress costs. M&M's proposal-II nevertheless supports the importance of maximising the Profitability of the Company. In

accordance with the proposal-II of M & M&M, Debt will increase the value of a corporation as corporate tax occurs in the real world. Businesses have an obligation to pay tax on any unit of currency received in operating revenues/earnings before tax. When a company borrows, it must pay interest, and interest paid before paying tax is paid according to commonly accepted accounting principles, that means that interest payment is tax-deductible. Arnold (2008) [4] suggests that the maximisation of income is not impaired by recapitalisation [5]. The risks associated with Debt (interest & principal payments, financial distress) are growing as the business continues using Debt. It is, therefore, rational for shareholders to expect a further return for the added risk. This means that the gain of debt usage is offset by demand for shareholders' additional return, leaving no impact on the valuation of the Company [3].

1.1 Overview of Bangladesh FMCG Industry

Bangladesh is rapidly developing in the food and beverage industry, which employs a notable share of the workforce in the region. In Bangladesh, the food and beverage industry averaged 7.7 percent per year between 2014 and 2017. The 2016 Bangladesh Economic Census has reported that around 246 medium-sized food and beverage companies provide jobs in Bangladesh with a workforce of 19% of the mechanical assembly, or 8% of all Bangladeshi employees. Alimentary industries use 2.45% of the nation's total workforce, and their effect on GDP in 2017 was 2.01%. There are also many small factories and local food and beverage units across the country. As some industry expert's claim, the food and beverage industry in Bangladesh is a USD 4.5 billion industry. Bangladesh sold over 700 million dollars of processed foods and drinks in 2017; more than 60% of these were shrimp and fish products. The beverage and food industry in Bangladesh undergoes a period of growth in 2018, with real changes. Both companies engaged in processing raw materials for produce, packaging, and distribution are in the food and beverage industries. New foods and processed foods, alcoholic and non-alcoholic drinks, are all part of this process [6]. Except for pharmaceutical products, any aspect intended for human use is subject to this portion. The industry of food and drink is divided. Output in this segment is divided between a few different organisations, but none of them has a market share that is sufficiently

high to affect field or value detection. A limited variety of food and beverages have always been available in Bangladesh. Local or private companies use simple handling as food and fuel to secure and handle crude farm products. In the 1960s, the use of new technologies for wheat and rice processing, moutar seed brewing and highly restricted bread and treatment methods was demonstrated in the business scale in the food handling in the growth of this area until the energy scale was not taken until the scale of the 1980s. Since then, the industry has characterised itself by preparing gradually different products to respond to the evolving demands of the citizens of Bangladesh. In Bangladesh, there are real food arrangements with dairy, edible oil, sugar, rice, wheat, soil products, tea, poultry/hamburgers, heartbeats and flavors, as well as fish handling practices. The food preparation region will continue to expand significantly in the coming years, as it is stimulated by the lively growth of the numerous white-coloured populations of Bangladesh and increasing demands for extra use [6].

1.2 Problem Statement

It was uniformly observed that most corporate capital structure empirical analysis in the developed world was undertaken [7]. There was a relatively limited study in developing countries [2, 8] on firms' funding decision [1]. Since the developing country is very different from the developed world, despite the great results by Modigliani and Miller published in the 1958 paper, the validity with little research on capital structure in the developing world is still doubtful. The emphasis is also that for developing countries like Bangladesh, the hypothesis from research in the developed world is valid and acceptable. Berk & DeMarzo (2007) [5] claims that most corporate finance research work is US-based [9]. When Europe itself argues for restricted corporate finance research in Europe because of the absence of databases as opposed to two US databases [5], it should also be clear that less research on corporate financing should be performed in the developing world in Asia. Even several studies in the developing world show that various capital structure models (pecking order, contract, the timing of the market, etc.) can be followed from time to time and country to country. European and American countries are perceived as developing worlds, but studies suggest European businesses and their parallel funding strategies in the US [10]. A few research has conducted in

Bangladesh, but still, it is far behind from the concentration.

2. REVIEW OF THEORY, LITERATURE AND HYPOTHESIS DEVELOPMENT

Myers and Avison (2002) [11] suggests that the theories of capital structures and empirical evidence-primarily concentrate on funding strategies and the selection of an optimum leverage ratio for a particular type of business operating in a distinct institutional setting.

2.1 Pecking Order Financing Choices

Mayer suggested the principle of pecking order along with the trade-off theory. As explained by a researcher, a company is said to obey the order of a pick-up if it wants to use external funding internally and Debt to equity [12]. Myers and Majluf's (1984) describe a company as a corporation if it chooses internal to external funding and Debt to equity if external funds are used [12]. The theory of the punching order relaxes M&M theory's assumptions and attempts to explain the optimal arrangement of the capital of the current organisation. Based upon adverse selection considerations and organisation considerations, the model punching order can be extracted.

2.1.1 Adverse selection

Myers and Majluf (1984) [12] have identified adverse selection as their primary justification for the punching order. The unfavourable range is called asymmetrical information that provides more information for the sellers than the buyers. Buyers may decrease the price they are prepared to pay over the unfavourable range, where a seller has private information about the value of the product. In practice, Majuf and Myers (1984) [12] clarify why foreign investors are willing to sell equity if the manager wants to sell equity outside the business. In certain cases, the overstock business manager can sell equity to gain higher market value, vice versa [12]. According to another study, while debt problems can also suffer from negative selection, the valuation of the Debt is lower in risk and is not vulnerable to private knowledge from managers relative to equity financing. This means that debt rates appear to be lower than capital stocks [13].

2.2 Trade-off Theory

If Corporate Earnings tax is implemented in the original irrelevant plans, the interest tax shield

flexibility with the risk of financial distress will be gained. The amount of Debt to be issued shall be calculated so as to maximise the value of a corporation. The conventional theory is that optimum leverage represents the idea of a trade-off between the tax shield and mortgage costs of bankruptcy [14]. According to the trade-off, principle describes the objective of the debt-equity ratio set by a corporation that has been pursuing the philosophy of trade-offs by combining debt tax provisions with the costs of bankruptcy.

$VL=VU$ (Value of Firm with no Debt) + PV (Interest Tax Shield) - PV (Costs of Financial Distress)

For using the tax shield, the organisation has got motivation for increasing leverage. But it is noted that the more Debt arises for an organisation, the more risk they have to convey. Increasing risk may be denoted as the default risk for an organisation, and also it is also identified as the financial distress costs for a company [13]. Hennessy and Whited (2005) [15] examine a trend that indicates the observance of the negative association of Profitability and Debt under certain potential parameter values [15, 16]. A researcher builds a model in his study where is the value of equity and the value of Debt is maximised in conjunction with cost-free contract writing, and so clarify the slow adjustment to the target debt amount [17].

2.2.1 Tax shields

From the M&M theory, higher debt and interest payments in the global business tax system may have less taxes. The interest companies have to pay can usually be seen as a tax benefit fee so that the value of the corporation can be increased. As Graham (2003) contributed, while companies have an opportunity to borrow because they have an advantage in corporate tax, they do not find it advantageous to lend to the business [18]. Consequently, it is in dispute with corporate tax. This is because interest income and dividends/profits on investments are taxed at varying rates. Interest earnings are taxed at a standard rate of income tax, while dividends/capital earnings are mostly tax-free or lower. That means that people with higher rates of taxes will have perfect debt-equity. For businesses, it will borrow from low revenue tax groups as much as possible to provide a tax cover, while citizens would be looking for higher interest rates to compensate the higher individual

tax classes under which they are. This will therefore reduce the Company's tax shield and minimise debt usage. Finally, it has a good relationship with personal tax between Debt and corporate tax.

The most theoretical advantages of Debt is a debt tax buffer [19]. Researchers have presented many examples of the tax protection against interest paid on Debt in many tax systems worldwide. A researcher denotes that the tax policy in the United States allows businesses to record losses for their accounting year so that corporations can either get pre-tax cash reimbursements or get potential tax cuts [20]. However, the United Kingdom states that these corporations in the United Kingdom use the imputation tax scheme as well as their Debt in the US. This means that businesses in various countries fund their capital structure using a different strategy with advantages from the tax protection on interest payments on Debt but with different taxes worldwide. While the major theoretical advantage of Debt is the tax shield, the principal adverse impact is the risk of financial distress [19].

2.3 Determinants (Proposed Dependent and Independent Variables)

In the study, various factors suggested by observing various researches and their different theories of capital structure. From their Debt to Total Asset will be identified as dependent variables and Asset structure, Financing preference or situation (captured by Profitability), Growth, Size, Business Risk as the independent variables for the study. All these variables are proposed or demonstrated to significantly affect corporate financial structure from the previous theoretical and empirical financial structure studies.

2.3.1 Asset structure

According to the theories of financial systems, asset types affect the financial structure of an undertaking to some degree [21]. The trading theory indicates that businesses with fixed assets use more debt funding because they have the option of issuing secured bonds to minimise the risk of financial distress. Tangible asset companies which can serve as collateral must be able to access debt funding, preferably because collateral reduces the risk of creditors, especially in cases of bankruptcy. Companies with a larger proportion of intangible assets, if faced with

bankruptcy, are more vulnerable to cost losses. On the contrary, the bankruptcy process is completely unscathed by tangible assets. The profit generated mainly by intangible assets in Procter & Gamble often operates at a low debt ratio [22]. The provision of foreign investor secured debt reduces costs related to knowledge asymmetry [21, 23, 24]. This benefit would be proposed for a corporation with a higher degree of tangibility to issue further debts.

Furthermore, as Debt is collateralised, managers will possibly be more discerning as allocating resources, reducing the agency costs between managers and stakeholders in large measure [25]. This might also allow the ratio of leverage to grow. Data samples from 292 Asian companies in Japan, Hong Kong, Singapore, Thailand, Thailand, Malaysia, Taiwan and the Philippines were used in the analysis [24]. They also reported a very positive correlation of long and short-term leverage ratios between tangibility level and book value.

$$\text{Asset Structure} = \text{Fixed Asset/Current Asset}$$

H01: Asset Structure has a significant impact on FMCG Companies of Bangladesh Debt to Total Asset.

2.3.2 Financing preference or situation (profitability)

Many empirical studies have shown the value of financial preference (Profitability) in capital structure. The two hypotheses have a discrepancy between Profitability and the organisation's leverage. A study indicates that the principle of trade-offs predicts a high-profit corporation's Debt in order to pay for corporate tax [26]. The tax shield explained by some researcher is one of the points argued by trade theory. They assume that a tax shield [27] is the most incentive for using Debt. And businesses must be successful in receiving the tax shield. Companies prefer to raise more Debt to invest in infrastructure so that their revenue can be increased. This means companies with higher Profitability appear to emit more Debt, and companies with lower Profitability would emit less Debt. In trade-off theory, the other argument is that of Jensen's free cash flow. Jensen said they have to finance their capital structure externally in order to fund their investment. Yet the lower their cash balance, the more vulnerable they are in Debt [28]. A positive correlation between Profitability and leverage is, therefore, to be

expected. Prior empirical studies on the financing of companies in the developed countries (Annual Study on Companies Financing) [21, 29-33]

Net Profit Margin: Net Profit/ Revenue

H02: Financing preference or Profitability has a significant impact on FMCG Companies of Bangladesh Debt to Total Asset.

2.3.3 Growth

As the agency's theory indicates, administrators are likely to expropriate debt holders' money. Agency costs are much higher for a business as it has more varied investment possibilities [23]. Accordingly, creditors need strict contractual arrangements to restrict the business's investment conduct, but a business will borrow less to improve investment stability [24]. Furthermore, growth opportunities are non-collateral assets, and they do not produce immediate returns [21]. The trade-off theory argues that the relationship is negative leverage and prospects for development [34]. Studies indicate a lot more a substantial positive correlation between short-term Debt and growth.

Growth = (Final Value – Initial Value) / Initial Value

H03: Firm's Growth has a significant relationship with the FMCG Companies of Bangladesh Debt to Total Asset.

2.3.4 Size

The Size of the Company is consistently connected to the debt ratio of the Company [21]. Large businesses are more diversified and less likely to default or bankrupt their goods and services [24]. Large corporations could save on debt issuance costs by economies of scale. Research reports that the Company's Size and the overall leverage ratios have a major positive relation [35]. A Research of listed Chinese companies found the same conclusion [36]. The theoretical prediction for the effect of Size on leverage is uncertain, as discussed in [30]. It is argued that bigger companies appear to have more varied assets, stronger cash flows and greater credibility. More information is available. According to commercial theory, more large companies are projected to have higher debt capacities relative to smaller ones, ceteris

paribus, because of a lower chance of failed bankruptcy.

Size = Log of Total Asset

H04: Firm's Size has a significant impact on FMCG Companies of Bangladesh Debt to Total Asset.

2.3.5 Business risk

One of the key determinants of the composition of a company's capital is the degree of business risk [37]. The theory of capital structure tax shelter bankruptcy expense defines the maximum flexibility of the organisation as a function of corporate risk [38]. Given the expense of agency and bankruptcy, the organisation is advised not to use 100% of Debt's tax advantages entirely in a static model. The more likely a corporation is to be exposed to such expenses, the more motivation the debt levels within its capital structure will be reduced. The Company's operational risk is one of the companies' factors that influence this degree of exposure. The more volatile the Company's revenue stream, the greater the probability of default and being exposed to such costs. A researcher reports that companies with higher volatile income growth can face more situations where cash flows for debt services are too low [13]. A study also notes the reduction in financial risk and less Debt usage in high-risk enterprises [39].

Business Risk = Return to Investors/Total Assets

H05: Business Risk has no relationship with FMCG Companies of Bangladesh Debt to Total Asset.

3. METHODOLOGY

The purpose of the research is to explore the corporate financial structure of Food and Allied private Company of Bangladesh firms by studying determinants of financial ratios. The research studies based on FMCG private Companies, which are listed on Bangladesh stock markets using ordinary least squares (OLS) regression analysis. A research design choice represents a researcher's concern over the dimensions of the research process and methods. The aims of this research were to study the deciding structure of the capital and its effect

on Bangladeshi FMCG companies' results. The descriptive use of research methods was adopted for use in this report. The aim of this paper is to evaluate the correlation between the determinants as independent variables of capital structure and the Debt to total assets as a dependent variable. The quantitative analysis approach for this study is, therefore, the most suitable method. In this research, theory and theoretical structure are established that can only be tested in quantitative ways. Another explanation for using this approach was the support for multiple studies in literature, using quantitative methods to evaluate and test their hypothesis.

3.1 Research Design

The analysis is based on the financial report of performance management of FMCG Company in Bangladesh, which also focused on the demographic and finance determinants linked with the Debt to Total Asset. The study mainly focuses on the Debt to Total Asset to measure the Profitability of FMCG Company in Bangladesh. For error-free data its being constantly check through, update and edit for analysis. Even the data place on Eviews, the figures are checked two times to make it Error free. This is how it further improves the accuracy of the data before the conduction of the analysing step. Eviews will be used for measuring the variables. The study Regression analysis has done to understand the significant value of the variables from 2014 to 2019.

3.2 Data Analysis

In Appendix – 1, the financial ratios that were used in the research are presented. The column showed the values of Debt to total Asset, Asset Structure, Financing Preference (Profitability), Growth, Size and business risk collected from the annual report of the five different Company (Table 1). The companies are - Golden Harvest Agro Industries Ltd. (GHAIL), British American Tobacco Bangladesh Company Limited. (BATBC), Agricultural Marketing Company Ltd. (Pran) (PRAN), Olympic Industries Ltd. (OLYMPIC) and Fu Wang Food Ltd. (FUWANGFOOD). During the data analysis, in particular power analysis, achieve the 0.04 level of significance. This indicates that the power analysis is showing enough participants for five hypotheses.

4. RESULTS

4.1 Descriptive Analysis

4.1.1 Debt to total asset

We can see from our analysis the mean value of Debt to Total Asset is 0.377559, and the median value of Debt to Total Asset is 0.332581. For our given sample in our study, we see the maximum value of Debt to Total Asset can go up to 0.634602, and the minimum value can go down to 0.160173. The standard deviation for our data is 0.121931 in Debt to Total Asset.

Table 1. Descriptive Analysis of FMCG Companies 2014 – 2019

| | Debt to Total Asset | Asset structure | Financing preference (Profitability) | Growth | Size | Business Risk |
|--------------|----------------------------|------------------------|---|---------------|-------------|----------------------|
| Mean | 0.377559 | 0.882742 | 0.085514 | 12.08580 | 9.108415 | 0.146387 |
| Median | 0.332581 | 0.647650 | 0.097562 | 4.240843 | 9.188454 | 0.050596 |
| Maximum | 0.634602 | 2.429640 | 0.148259 | 84.36455 | 10.03970 | 1.569206 |
| Minimum | 0.160173 | 0.303465 | 0.020702 | -34.42834 | 7.432569 | 0.025217 |
| Std. Dev. | 0.121931 | 0.592567 | 0.046375 | 26.60549 | 0.826198 | 0.278702 |
| Skewness | 0.509684 | 1.383119 | -0.135182 | 0.971757 | -1.003802 | 4.633649 |
| Kurtosis | 2.343409 | 3.653882 | 1.392235 | 4.085030 | 2.715225 | 24.24531 |
| Jarque-Bera | 1.837776 | 10.09954 | 3.322508 | 6.193175 | 5.139458 | 671.5574 |
| Probability | 0.398962 | 0.006411 | 0.189901 | 0.045203 | 0.076556 | 0.000000 |
| Sum | 11.32678 | 26.48227 | 2.565431 | 362.5741 | 273.2524 | 4.391619 |
| Sum Sq. Dev. | 0.431145 | 10.18293 | 0.062369 | 20527.71 | 19.79547 | 2.252570 |
| Observations | 30 | 30 | 30 | 30 | 30 | 30 |

4.1.2 Asset structure

We can see from our analysis the mean value of Asset structure is 0.882742, and the median value of Asset structure is 0.647650. For our given sample in our study, we see the maximum value of Asset structure can go up to 2.429640, and the minimum value can go down to 0.303465. The standard deviation for our data is 0.592567 in Asset structure.

4.1.3 Financing preference (Profitability)

We can see from our analysis the mean value of Financing preference (Profitability) is 0.0085514, and the median value of financing preference (Profitability) is 0.097562. For our given sample in our study, we see the maximum value of financing preference (Profitability) can go up to 0.148259, and the minimum value can go down to 0.020702. The standard deviation for our data is 0.046375 in financing preference (Profitability).

4.1.4 Growth

We can see from our analysis the mean value of growth is 12.08580, and the median value of growth is 4.240843. For our given sample in our study, we see the maximum value of growth can go up to 0.8436455, and the minimum value can go down to -34.42834. The standard deviation for our data is 26.60549 in growth.

4.1.5 Size

We can see from our analysis the mean value of Size is 9.108415, and the median value of Size is 9.188454. For our given sample in our study,

we see the maximum value of Size can go up to 10.03970, and the minimum value can go down to 7.432569. The standard deviation for our data is 0.826198 in Size.

4.1.6 Business risk

The mean value of Business Risk is 0.146387 and the median value of Business Risk is 0.050596. For our given sample in our study, we see the maximum value of Business Risk can go up to 1.569206, and the minimum value can go down to 0.025217. The standard deviation for our data is 0.278702 in Business Risk

4.2 Correlation Analysis

Correlation analysis is a statistical method used to evaluate the strength of the relationship between two quantitative variables. A high correlation means that two or more variables have a strong relationship with each other, while a weak correlation means that the variables are hardly related. Table 3 shows the correlation between the dependent variable with each of the independent variables. The analysis is explained below:

4.2.1 Debt to total asset and asset structure

The correlation between Debt to total Asset and Asset structure is 0.4264, indicating a strong positive correlation between these two. When Asset structure increases, Debt to Total Asset decreases. That means the null hypothesis is accepted and the alternate hypothesis is rejected.

Table 2. Correlation Analysis between the variables of FMCG Companies 2014 – 2019

| | Debt to Total Asset | Asset structure | Financing Preference (Profitability) | Growth | Size | Business Risk |
|------------------------------------|----------------------------|------------------------|---|---------------|-------------|----------------------|
| Debt to total Asset | 1 | 0.426440 | 0.781900 | 0.014578 | -0.375066 | 0.065506 |
| Asset structure | 0.426440 | 1 | 0.311951 | 0.103584 | 0.134891 | -0.182630 |
| Financing preference profitability | 0.781900 | 0.311951 | 1 | 0.2193613 | 0.679254 | 0.100003 |
| Growth | 0.0145783 | 0.103584 | 0.219361 | 1 | 0.063610 | 0.2540233 |
| Size | -0.375066 | 0.134891 | 0.679254 | 0.0636101 | 1 | 0.014668 |
| Business risk | 0.0655061 | -0.182630 | 0.10000 | 0.254023 | 0.014668 | 1 |

4.2.2 Debt to total asset and financing preference (profitability)

The correlation between Debt to total Asset and Financing Preference (Profitability) is 0.7819. It indicates a strong correlation between these two. When Financing Preference (Profitability) increases, Debt to Total Asset decreases that means the hypothesis is accepted.

4.2.3 Debt to total asset and growth

The correlation between Debt to total Asset and Growth is 0.0145, indicating a positive correlation between these two. When Asset structure increases, Debt to Total Asset decreases. That means the null hypothesis is accepted and the alternate hypothesis is rejected.

4.2.4 Debt to total asset and size

The correlation between Debt to total Asset and Size is -0.3750, indicating a strong negative correlation between these two. When Size increases, Debt to Total Asset decreases. That means the null hypothesis is accepted and the alternate hypothesis is rejected.

4.2.5 Debt to total asset and business risk

The correlation between Debt to total Asset and Business Risk is 0.0655, which is a positive effect hypothesis accepted.

4.3 Regression Analysis

4.3.1 Coefficient

From the above Table 3 we can rewrite our equation as such:

$$Y = C + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \epsilon_i$$

Debt to Total Asset = 0.206096 + Asset structure -0.033589 + Financing preference -2.587394 + Growth 0.000813 + Size 0.044698 + Business Risk 0.037006

- If Asset structure increase by 1 unit, Debt to Total Asset will decrease by -0.033589 unit.
- If financing preference (Profitability) increase by 1 unit, Debt to Total Asset will decrease by -2.587394 unit.
- If Growth increase by 1 unit, Debt to Total Asset will increase by 0.000813 unit.
- If Size increase by 1 unit, Debt to Total Asset will increase by 0.044698 unit.
- If Business Risk increase by 1 unit, Debt to Total Asset will increase by 0.037006 unit.

The intercept on the x-axis is 0.206096.

Table 3. Regression Analysis of FMCG Companies 2014 – 2019

| Dependent Variable: DEBT_TO_TOTAL_ASSET | | | | |
|---|-------------|-----------------------|-------------|-----------|
| Method: Least Squares | | | | |
| Sample: 2014 2043 | | | | |
| Included observations: 30 | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 0.206096 | 0.180081 | 1.144463 | 0.2637 |
| ASSET_STRUCTURE | -0.033589 | 0.023941 | -1.402985 | 0.1734 |
| FINANCING_PREFERENCE_PROFITABILITY_ | -2.587394 | 0.414176 | -6.247088 | 0.0000 |
| GROWTH | 0.000813 | 0.000519 | 1.565925 | 0.1305 |
| SIZE | 0.044698 | 0.021729 | 2.057083 | 0.0507 |
| BUSINESS_RISK | 0.037006 | 0.049790 | 0.743255 | 0.4645 |
| R-squared | 0.728430 | Mean dependent var | | 0.377559 |
| Adjusted R-squared | 0.671853 | S.D. dependent var | | 0.121931 |
| S.E. of regression | 0.069847 | Akaike info criterion | | -2.308166 |
| Sum squared resid | 0.117086 | Schwarz criterion | | -2.027927 |
| Log likelihood | 40.62249 | Hannan-Quinn criter. | | -2.218515 |
| F-statistic | 12.87499 | Durbin-Watson stat | | 0.913849 |
| Prob(F-statistic) | 0.000004 | | | |

4.3.2 Standard error

The standard error of the regression (S), also known as the standard error of the estimate, represents the average distance that the observed values fall from the regression line. Conveniently, it tells you how wrong the regression model is on average using the units of the response variable. Smaller values are better because it indicates that the observations are closer to the fitted line.

- Standard error of Asset structure is 0.023941. This is the standard deviation of actual Value of Debt to Total Asset about the estimated value of Debt to Total Asset.
- Standard error of financing preference (Profitability) is 0.414176. This is the standard deviation of actual Value of Debt to Total Asset about the estimated value of Debt to Total Asset.
- Standard error of growth is 0.000519. This is the standard deviation of actual Value of Debt to Total Asset about the estimated value of Debt to Total Asset.
- Standard error of Size is 0.021729. This is the standard deviation of actual Value of Debt to Total Asset about the estimated value of Debt to Total Asset.
- Standard error of Business Risk is 0.049790. This is the standard deviation of actual Value of Debt to Total Asset about the estimated value of Debt to Total Asset.

4.3.4 R-squared

Our findings from the above Table 4 shows that R-squared is 0.728430, which is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination. 72.84% variance of the dependent variable is explained by all the independent variables together. We can say that

it is a moderately good-fit model, and the Adjusted R – Squared is 0.671853.

4.4 Testing the Hypothesis

In the above Table 4, to test the hypothesis, we used the significance level of 0.1. So, the value of alpha (α) = 0.1, If probability (p) is less than alpha ($\alpha=0.1$), we reject the null hypothesis. If probability (p) is more than alpha ($\alpha=0.1$), we fail to reject the null hypothesis.

1. H1: For Debt to Total Asset and Asset structure, p is more than α ; hence we fail to reject the null hypothesis and must accept it. This explains there is no notable relation between Debt to Total Asset and Asset structure
2. H2: Debt to Total Asset and Financing preference (Profitability), p is less than α ; thus, we reject the null hypothesis that defines a significant relationship between the two variables Debt to Total Asset and Financing preference (Profitability).
3. H3: For Debt to Total Asset and Growth structure, p is more than α ; hence we fail to reject the null hypothesis and must accept it. This explains there is no notable relation between Debt to Total Asset and Growth
4. H4: Debt to Total Asset and Size, p is less than α ; thus, we reject the null hypothesis that defines there is a significant relationship between the two variables Debt to Total Asset and Size
5. H5: For Debt to Total Asset and Business Risk, p is more than α ; hence we fail to reject the null hypothesis and must accept it. This explains there is no notable relation between Debt to Total Asset and Business Risk.

4.5 Prob (F-statistic)

Again, in Table 3, The F-statistic is 0.000004, which is lower than the significance level (0.1). That means the null hypothesis will be rejected, and there is a significant relationship between the independent and dependent variables.

Table 4. Testing the hypothesis

| | H1: Debt to Total Asset and Asset structure | H2: Debt to Total Asset and Financing preference (Profitability) | H3: Debt to Total Asset and Growth | H4: Debt to Total Asset and Size | H5: Debt to Total Asset and Business Risk |
|----------|--|---|---|---|--|
| P-test | 0.1734 | 0.0000 | 0.1305 | 0.0507 | 0.4645 |
| Analysis | P> α | P< α | P> α | P< α | P> α |

5. DISCUSSION

The study showed changes in the capital structure in the Bangladeshi FMCG company's capital structure calculated by a total debt ratio (total debt / total Asset) based upon the study of determinants of the capital structure, including dependence, independent and control variables. This study reveals various types of the debt ratio, most of which are debt-total, although others used a short-term or long-term debt-to-debt ratio. However, because of the lack of a consistent concept, the capital structure still has many variables to be calculated [7], the choice of corporate capital structure metrics is still conflicting. During the literature review, we found various factors related to the structure of the economy. Nevertheless, the analysis revealed that the key determinants of the capital structure are the composition, scale, Profitability and growth of companies. Some authors found a positive relationship between the capital structure and its determinants, some negative, while others find no meaningful correlation [40–42]. The study also suggests a void in the analysis of this topic despite large volumes of different studies related to the determinants of the capital structure. More needs to be done. In the view of Bangladesh, it is important to harmonise and standardise the structure of the properties, business risk and legal regulation. This allows the Company to be more competitive on the foreign market (except UK American Tobacco), in the country to have estimated standards with the developed countries. Legal infrastructure companies have enhanced stability from their creation, from the exercise of their Company and competition to the activity of the market.

Bangladeshi companies listed on the Dhaka Stock Exchange are not subject to debt studies that allow all the hypotheses proposed to be tested. The reverse relation between Debt and business size is first of all highlighted. The observations of the theory of pecking order supported the results obtained. That would mean that the management and investors have asymmetries in details. However, it can be noted that it is extremely neutral to evaluate the financing strategy of companies in view of the financial market conditions in Bangladesh. Debt is primarily supplied by the bank, which restricts alternative funding opportunities. An increasing business could face rising debt problems. We examined listed companies that had an apparent solution to equity issues. The reduction in the

Debt of large operators may reflect their particular reluctance to take financial risks and pass them to shareholders. This has its benefits and drawbacks. Reducing Debt suggests a company's underused economic ability. This is an example of a conservative funding policy: stable, free of major bankruptcy threats, but profitability restriction. Other findings of studies are also verified. Additional evidence is presented by the negative correlation between debt level and Profitability. The Profitability resulting from equity funding may be inadequate. Too conservative are investment projects. Therefore, businesses are unable to make full use of their growing resources. Debt aversion experienced by larger corporations could also be due to their restricted possibilities of using the tax insurance. Getting higher Profitability in such situations can be economically helpful because the Company spends so much of its tax surplus [41, 42].

6. CONCLUSION

The results obtained may also be reflective of a company's inefficient use of Debt. On the other hand, there are more stable firms with higher levels of Debt and Profitability than those with a more cautious funding approach. Functioning businesses that use leverage in their plans should produce better net performance because of the tax cover. If, however, an increase in assets (Debt) does not follow a higher profit rise, the funding of Debt would not be rewarding. In addition, debt funding may be abandoned if the study contributes to the risk of losing liquidity. Bursaries suggest that corporate growth, including fixed assets, is a non-study, and they prefer safer equity funding and does not seem to encounter such a relationship. The study found that the earnings of less and more indebted firms are being measured in nominal terms by businesses. The net Profitability of firms with a similar size and similar gross profit is different. In order for debt firms to have comparable net Profitability, the gross Profitability must be higher. The relationship between financial performance and the overall Debt may also be clarified in this manner. The hypothesis of tangibility was also not established.

The rise in Debt does not mean that the value of fixed assets is increased. This indicates that businesses affected by the study are not protecting their Debt by using fixed assets. However, the reverse relationship between business size and Debt appears to be the first

and foremost result of this relationship. The Company's growth rate and Debt has been similarly observed. Increased Debt in combination with this. However, it does not preclude adjustments in the valuation of fixed assets. The relationship observed represents the rest, indicating a conservative funding strategy. In most situations, fixed assets are supported with equities through negative relationships between asset organisation and Debt. Two interpretations may also be taken. On the one side, it is a good function because, in future, it allows the Debt to expand and fixed assets to be used as collateral. It can, however, result from low fixed asset productivity.

7. FUTURE RESEARCH

The findings of this research should be readily understood since this is research of considerable significance to the organisation. First, it only concentrates on the Bangladeshi-based business FMCG (Fast Moving Consumer Goods) company. However, it was only because of the fact that little attention was being paid to the FMCG Company in Bangladesh, as it is very difficult for Bangladeshi companies to find ways of financing their businesses. Secondly, only five FMCGs (Dhaka Stock Exchange-listed) from Bangladesh are studied here. This is also panel data used for analyses, which is compounded by the use of panel data of just six years. The number of sampled companies used may be increased in future research to assess if their findings are close to those obtained in this analysis. However, some other companies might be included the proper result and may portrait the scenery of the FMCG industry.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing Company rather it was funded by personal efforts of the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

Appendix 1: Data Analysis of FMCG Companies (Bangladesh) 2014-2019

| Organisation Name | Year | Debt to Total Asset | Asset Structure | Financing Preference (Profitability) | Growth | Size | Business Risk |
|--|------|---------------------|-----------------|--------------------------------------|--------|-----------|---------------|
| British American Tobacco Bangladesh Company Ltd. (BATBC) | 2014 | 0.5123248 | 0.7982347 | 0.0495710 | 27% | 7.432568 | 0.2320191 |
| | 2015 | 0.4266291 | 0.8580417 | 0.0408740 | 6% | 7.4711572 | 0.1985099 |
| | 2016 | 0.4215394 | 0.7730787 | 0.0457784 | 29% | 7.5483597 | 0.2145114 |
| | 2017 | 0.4809681 | 0.8202233 | 0.0383553 | 3% | 7.6666537 | 0.1686941 |
| | 2018 | 0.4488737 | 0.8810346 | 0.0429483 | 27% | 7.7523806 | 0.1770686 |
| Fu Wang Food Ltd. (FUWANGFOOD) | 2019 | 0.3069652 | 1.1055103 | 0.0342641 | 7% | 7.7740074 | 0.1555832 |
| | 2014 | 0.2631004 | 0.7392090 | 0.0751426 | 3% | 9.0716247 | 0.0506179 |
| | 2015 | 0.2713158 | 0.6559669 | 0.1342366 | 84% | 9.1281513 | 0.0819323 |
| | 2016 | 0.2936696 | 0.6393329 | 0.1123174 | 21% | 9.1709079 | 0.0581295 |
| | 2017 | 0.2941259 | 0.5828793 | 0.1053188 | 28% | 9.1991660 | 0.0390679 |
| Olympic Industries Ltd. (OLYMPIC) | 2018 | 0.3027797 | 0.5384553 | 0.0889814 | 2% | 9.2437635 | 0.0361743 |
| | 2019 | 0.3065747 | 0.5258575 | 0.0898058 | 39% | 9.2791001 | 0.0463718 |
| | 2014 | 0.4039317 | 0.5880348 | 0.1096941 | 41% | 9.7031741 | 1.5692064 |
| | 2015 | 0.3340056 | 0.4956092 | 0.1236064 | 25% | 9.7606998 | 0.1898683 |
| | 2016 | 0.3570043 | 0.3457939 | 0.1482587 | 48% | 9.8831370 | 0.2127617 |
| Golden Harvest Agro Industries Ltd. (GHAIL) | 2017 | 0.3793857 | 0.3498600 | 0.1455420 | 1% | 9.9600099 | 0.1801747 |
| | 2018 | 0.3088100 | 0.4799124 | 0.1385363 | 8% | 9.9907031 | 0.1829822 |
| | 2019 | 0.2859163 | 0.5524223 | 0.1362937 | 4% | 10.039699 | 0.1708305 |
| | 2014 | 0.1601727 | 1.5915073 | 0.1479912 | 34% | 9.5366033 | 0.0282455 |
| | 2015 | 0.2177114 | 2.1886462 | 0.1300897 | 3% | 9.6027721 | 0.0252174 |
| Agricultural Marketing Company Ltd. (Pran) | 2016 | 0.3311555 | 2.4296400 | 0.1252255 | 76% | 9.7028087 | 0.0354389 |
| | 2017 | 0.3262062 | 1.9731803 | 0.1225156 | 4% | 9.7767904 | 0.0312721 |
| | 2018 | 0.2810755 | 2.0009568 | 0.1191224 | 19% | 9.8196261 | 0.0337621 |
| | 2019 | 0.2464791 | 1.5831065 | 0.1084044 | 8% | 9.8892146 | 0.0313403 |
| | 2014 | 0.5410686 | 0.4532657 | 0.0320886 | 1% | 9.0397749 | 0.0505736 |
| Agricultural Marketing Company Ltd. (Pran) | 2015 | 0.6346021 | 0.7763783 | 0.0294643 | 0% | 9.1777418 | 0.0369159 |
| | 2016 | 0.6147579 | 0.5954715 | 0.0253391 | 4% | 9.1641352 | 0.0363183 |
| | 2017 | 0.5642531 | 0.4795519 | 0.0230796 | 3% | 9.1652509 | 0.0375506 |
| | 2018 | 0.5362565 | 0.3776413 | 0.0218820 | 1% | 9.1557758 | 0.0388056 |
| | 2019 | 0.4751225 | 0.3034647 | 0.0207022 | 5% | 9.1466854 | 0.0416737 |

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