THE DYNAMICS OF CAPITAL STRUCTURE AND FIRM VALUE OF LISTED INDUSTRIAL GOODS IN NIGERIA

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ABSTRACT

This paper aims to establish the effect of capital structure on the firm value of fourteen (14) quoted industrial goods companies operating in Nigeria for ten years (2008 to 2017). Data were obtained from the annual reports and accounts of the sampled firms. The indicators for capital structure comprises of long term and short term debt, while proxies for firm value include return on equity and share price. Multiple regressions were used to analyze the data. Long-term debt appeared negative and significant, with a return on equity. Like previous studies, value seems to be enhanced when industrial goods companies employ more internal funding, short term debt than long term debt. Regarding the share price, short-term debt significantly increases share price. However, long-term debt does not impact the share price of listed industrial goods companies in Nigeria. This paper recommends that management and board of directors should ensure the optimum level of financing mix in their composition of capital that enhances their business worth, particularly by minimising long-term loans.

Contribution/ Originality

This study is an extension of previous research, where capital structure components are considered to examine their effect on return on equity and share price of listed industrial goods companies in Nigeria. A review of prior studies proves a dearth of literature in the Nigerian industrial goods industry despite their immense contribution to the economy. Therefore, this paper seeks to capture the value of industrial companies with regards to its capital composition due to its fundamental contribution to a large sector like manufacturing in Nigeria.

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How to cite: Maryam Isyaku Muhammad, Mohammed Abubakar, Mohammed Mahmud Kakanda, and Muhammad Abdul Abubakar (2020). The dynamics of capital structure and firm value of listed industrial goods in Nigeria. Asian Journal of Empirical Research, 10(7), 184-193.

1. INTRODUCTION

Firm value captures the potentialities that are developed in the business enterprises as a result of effective performance. Firm value could be regarded as the assessment of a company's success, which is seen as a benchmark for investors to invest their capital. Once the firm performs better, the company's stock market price is expected to increase considerably, thereby attracting the positive response of investors in the business-businesses across the globe device avenues to finance their programs to enable them to achieve their goals. Investment can be through debt and equity sources of capital. The capital component remains the most crucial aspect; hence management is saddled with the responsibility of making strategic decisions for the overall interest of the enterprise. In this light, the management is also left with the responsibilities of making arrangements on how the capital structure of an enterprise should be designed and sourced. The capital structure encompasses different choices available to a firm that a firm adopts concerning the firm investment, which coincides with its priorities. Significant effort about the financial decision-making process revolves around what constitutes an optimal capital structure, where the cost of capital is curtailed to enhance firms' value. Thus, ascertaining an ideal capital composition remains complex for financial managers. The composition of capital is crucial as it affects both profit maximization and firm survival.

Firm value is documented by Nhan and Quy (2016) as one of the most fundamental resources that are strategic to the business life of an enterprise. Firm value can not only be seen as a factor that facilitates the building of business reputation and attracting capital for business activities but also in contributing a country's strong economy and effective, sustainable development. It is therefore expected that management should be proactive and very resilient in its approach to corporate activities in its effort to enhance the overall performance for improved outcomes. In creating value, the choice of a firm's capital composition should be a top priority (Rodrigues *et al.,* 2017). The foundation of the conjectural background on capital structure pioneered by Modigliani and Miller (1958) (MM) concludes that financial leverage presents insignificance to a firm's market value.

Empirical evidence strives to document whether their theory is strong enough to resolve challenges concerning optimal financing decisions for organizations, including its relevance to firm value. In addition to the implication of a fitting finance composition mix on firms' worth and in what situation the selection of capital structure deems relevant (Aliu, 2010). In this line of thought, empirical findings remain at odds. The motivation of this paper is hinged on the inconclusiveness of prior findings, the consequence of the choice of capital on firm value for the industrial goods industry where a dearth of literature exists. The frequency at which industrial goods finance their operations through debt or equity is an issue worthy of note based on their huge contribution to the economy. Economies could only succeed through the achievement of a viable economic growth and industrial modernization. The manufacturing sector plays a strategic role in the development of Nigerian economic efficiency. Therefore, stakeholders need to appreciate changes in firm value resulting from an optimal capital of industrial goods companies. The decision on how to finance operations determines the returns and risks of investors, as such, firm value. In light of the above, it becomes necessary to examine changes in firm value concerning the capital structure of industrial goods firms in Nigeria.

Corporate value can be directly altered by the structure of capital, which may be viewed as the profit emanating from leverage. Higher leverage, for instance, increases financial risk. As the valuation process constitutes an estimated level of efficiency, including relevant levels of returns, every concern should gauge the prospective effect of available alternative cost of financing on firm worth. Therefore, this paper contributes to the existing literature regarding capital structure and firm value in a developing country. Current studies conducted on capital structure include; Aggarwal and Padhan (2017) in Indian Hospitality Industry and Nguyen and Tai (2017) in Kenya. In Nigeria, Matthew and Stephen (2016) examined capital mix, cash holdings, and firm value. El-Maude *et al.* (2016) address the capital structure effect on the performance of cement industries in Nigeria.

Salawu (2017) captured selected quoted companies. This study attempts to measure firm value with share price, in addition to the return on equity (ROE), a more concise valuation of firm value, unlike prior studies mentioned above. Also, the industrial goods industry constitutes a vibrant industry where scarce literature exists in relation to this area. Therefore, this study attempts to address some loopholes of previous studies.

2. LITERATURE REVIEW

Various scholars have documented a quite number of definitions of the term capital structure. Like most other terms in finance, lack of consensus exists on any of the definitions. Nirajini and Priya (2013) view the concept of capital structure as a channel in which businesses are financed through some combination of equity and debt. Similarly, Ishaya and Abduljaleel (2014) referred to it as a mix of sorts of securities issued by a firm to finance its assets.

Modigliani and Miller (M&M) theorem, the universally accepted theory, constitutes the foundation of capital structure theory employed by various researchers. It constitutes the core of a fair economy and autonomous setup. It is said to be the financing performance of a firm (Simon and Afolabi, 2011). Businesses may opt for varieties of the composition of capital, laying greater emphasis on which best maximizes firm value. The various financing alternatives available and how it spurs profitability is explained by capital structure (Raheman *et al.,* 2007). Capital structure, in this case, can be seen as a mix of a company's long-term debt, specific short-term debt, common equity, and preferred equity (stock).

The idea of the capital structure remains undiscovered till Miller (1958) expatiated in his capital structure irrelevancy theory. The theory posits that the choice of a firm's capital composition largely determines the market worth of a firm structure, which relies on the earning capacity and the risk of operating assets. Arguments have been raised in the realm of theory and empirical studies surrounding capital structure, market value relationships. Literature has presented several measures of firm value, which constitutes the aggregate efforts of liquidity, asset management and debt on operational outcomes. Return on assets (ROA), often used in literature, comprises of the income by businesses concerning the assets. ROE relates to the investors' reward for their capital contribution to the firm (Akhtar *et al.,* 2016). Güner (2016) conceptualizes firm value as earnings before interest and taxes scaled down by assets. Adenugba *et al.* (2016) measure firm value as the market value of shares. In line with agency theory, previous works document that leverage minimises value for fast-growth firms and vice versa.

Abundant literature exists on the effect of capital structure in different economies across the globe. The differences in the outcome of the empirical findings have been attributed to differences in data sets, time frame, industry type and location. For the capital structure and financial performance of Nigerian firms (Osuji and Odita, 2012), a negative relationship between leverage and performance was found. In Iran, Gholamreg *et al.* (2013) reported a significant negative relationship for companies in the Teheran stock exchange. In a nutshell, evidence empirically shows a negative, significant relationship for the above studies. In the same spirit of research, Ramachandram and Madhumathy (2016) results were significant and negative for Indian textile companies. Similar outcomes were provided by Abdur (2015), Almustapha (2014), Banafa (2015), Tifow and Sayilir (2015), and Zeitun and Salman (2015). The same applies to Xuan and Ellis (2017) using a sample of Vietnamese firms. However, contradicting findings were reported by Hussain *et al.* (2016) for Pakistani firms.

In Nigeria, findings are not significantly different for studies like Aransiola and Oluwadetan (2015), who present a significant inverse result between leverage and return on equity of quoted manufacturing companies. A similar instance applies in Migiro and Abata (2016) study using 30 listed firms for ten years. Adenugba *et al.* (2016) conclude that financial leverage proves a better alternative compared to equity in terms of long term project funding. Nwude and Anyalechi (2018)

considered the cost of capital and performance of commercial banks with pooled OLS regression. Their analysis portrays the absence of a unidirectional or bidirectional relationship.

Findings are not different for Jordanian listed firms (Khasawneh and Dasouqi, 2017) with a sample of industrial and services sectors. A significant negative impact of debt financing was found on the firm's performance. Other studies include Jamal and Mahmood (2018) and Rahayu et al. (2019), who document a negative, significant influence of capital structure on profits of manufacturing companies listed in Indonesia. In Europe, Vatavua (2015) reports a negative relationship for Romanian companies indicating risk-taking behavior across manufacturing companies in Romania.

In line with the literature as well as pecking order and agency theories, the succeeding hypotheses were conveyed in null (H_0) procedure to guide the study:

H1a: Long-term debt has a significant positive impact on the return on equity of listed industrial goods companies in Nigeria
H1b: Short-term debt has a positive impact on return on equity of listed industrial goods companies in Nigeria
H2a: Long-term debt has a significant positive impact on the share price of listed industrial goods companies in Nigeria
H2b: Short-term debt has a significant positive impact on the share price of listed industrial goods companies in Nigeria

From the empirical review, it can be deduced that capital structure presents mixed results across the sampled firms in different countries. It could be a variation in the methodology used in carrying out the research work and the various contexts in which the research was conducted. Also, the variation could be attributed to differences in countries and also the time factor. In light of this study, industrial goods companies are the context of consideration.

From the above review and prior studies, inconsistencies were apparent. Moreover, neglect of some measurements of firm value like shareholders' return and share price are indicated. Hence, this study seeks to fill the empirical vacuum by investigating the effect of capital structure on return on equity and share price of quoted industrial goods companies in Nigeria. However, the theories underpinning this study are pecking order and agency theories. The idea behind pecking order encompasses the situation an entity exhausts its internal sources of funds before opting for an external source. In a situation where debt is not feasible, equity capital should constitute the last resort. Agency theory posits that the quantum of leverage in a firm capital structure determines, to a large extent, the manager's choice of functional activities. These activities, in turn, predict the performance of the firm.

3. METHODOLOGY

This paper adopts an ex-post facto research design as data was sourced from existing annual reports of sampled companies. The population of this study comprises the fourteen (14) industrial goods companies listed under the Nigeria Stock Exchange as of 31st December 2017. A span of ten (10) years from 2008 to 2017 is appropriate as it coincides with the period of major reforms in the industry. As at the time of compiling data for the study, 2018 data was unavailable. The criteria for choosing the sample size are; companies' accounting year-end should be December and also listed on the Nigeria stock exchange by 2008 to ensure comparability. Criterion coincides with Morad and Adel (2013).

The dependent variables constitute share price and return on equity while the independent variables include long term debt, short term debt. Firm size and efficiency are the control variables. Measurements of the variables are presented in Table 1 thus:

Table 1: Description of variables

Variables	Measurement	Abbreviation
Dependent:		
Return on equity	Profit after tax by shareholders fund	ROE
Share price	as the market price of shares of the sample firm as stated Nigerian stock exchange market as at the end of the respective years	SPRICE
Independent:		
Long term debt	Long term debt is calculated as long-term debt scaled by total capital	LTD
Short term debt	*Short-term debt divided by total capital*	STD
Control:		
Efficiency	Sales scaled by total assets	EFF
Size	Natural logarithm of total assets	SZE

Source: Authors' compilation, 2020

The model for the observed investigation is given as follows:

$$ROE_{it} = \beta_0 + \beta_1\, LTD_{it} + \beta_2\, STRD_{it} + \beta_3\, EFF_{it} + \beta_4\, SZE_{it} + \varepsilon$$

$$SPRICE_{it} = \beta_0 + \beta_1\, LTD_{it} + \beta_2\, STRD_{it} + \beta_3\, EFF_{it} + \beta_4\, SZE_{it} + \varepsilon$$

Where:
ROE_{it} = Return on equity of firm i in year t
$SPRICE_{it}$ = as the market price of shares of the sample firm as stated on the stock exchange market as at the end of the respective years
LTD_{it} = Long term debt ratio of firm i in year t
STD_{it} = Short term debt ratio of firm i in year t
EFF_{it} = Efficiency of turnover of firm i in business in year t
SZE_{it} = Size of firm i in year t
ε = the error term

4. RESULTS AND DISCUSSION

This section commences with the discussion of the variables using descriptive statistics. Presentation of results of model estimations and the inferences drawn from the hypotheses tested follows the introduction. Pearson correlation coefficients and multiple regression techniques were employed to determine the effect of the regressors on the dependent variables.

The descriptive statistics are presented in Table 2, where the minimum, maximum, mean and standard deviation of the data for the variables used in the study are described.

Table 2: Descriptive statistics

Variables	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
ROE	0.205	0.250	-0.049	0.670	1.060	2.785
SPRICE	15.601	14.275	0.620	40.000	0.706	2.010
LTD	0.271	0.212	0.081	0.663	1.030	2.430
STD	0.345	0.127	0.203	0.555	0.556	1.904
EFF	0.883	0.412	0.162	2.242	1.041	4.417
SZ	22.592	1.887	18.733	27.147	0.177	3.167

Source: Researchers' analysis using STATA 14
Note: ROE = Return on Equity; SPRICE = Share Price; LTD = Long Term Debt; STD = Short Term Debt; EFF = Efficiency; SZ = Size

From the result of the descriptive statistics in Table 2, return on equity (ROE) has an average value of 0.205, indicating that listed Industrial Goods companies in Nigeria present a mean of 20.5% as their return on shareholders fund. Moreover, the minimum and maximum values for ROE are -0.049 (4.9% loss) and 0.670 (67%), respectively, while the standard deviation stood at 0.250. It portrays that there is a wider variation between the sampled firms in regards to returning on equity since the standard deviation (0.250) is higher than the mean value (0.205). However, based on the result of descriptive statistics from Table 2, share price (SPRICE) has a mean value of 15.601 (that is N15.60 per share), a minimum and maximum values of 0.620 (62 kobos per share) and 40.00 (N40.00 per share) respectively. The standard deviation of 14.275 appears lower than the mean value of 15.601. It indicates a minimal disparity between listed industrial goods companies in Nigeria to share price.

Table 2 shows that long term debt (LTD) appears with a mean of 0.271. A minimum and maximum of 0.081 and 0.663, respectively, while the standard deviation stood at 0.212, which implies a narrow variation between the sampled companies in this study. Further, short term debt has an average score of 0.345, which portrays that the short-term debt of sampled companies composed of 34.5% short term debt to total assets. Also, short term debt has a minimum of 0.203 (20.3%) and a maximum score of 0.555 (55.5%), the standard deviation stood at 0.127 (narrow variation between the sampled companies in this study regarding short term debt). Efficiency presents a mean of 0.883 (88.3%), a minimum and maximum score of 0.162 (16.2%) and 2.242 (224.2%), respectively. The standard deviation of 0.412 stands higher than the mean value (wider dispersion between the sampled companies in this study). The mean, minimum and maximum values of size are 22.592, 18.773 and 27.147, respectively. However, the standard deviation appears as 1.887, which is lower than the mean value. It implies an indication of a narrow dispersion between the sampled companies in this study.

Worthy of note, the skewness alongside the kurtosis values presented for each of the study variables is to determine the normality or otherwise of the data used in this study. On the opinion of Tabachnick and Fidell (2007), even though achieving normality of study variables is not a constant requirement for analysis. Still, the result is considerably better if the variables are found to be normally distributed. The authors further stressed that the normality of data is usually obtained by statistical or graphical approach or even both. The most usable mechanisms of normality are Skewness and Kurtosis. In essence, Skewness deals with the asymmetry (center or mean oriented) of a given distribution, while kurtosis looks at the peakedness (high or flatness) of the distribution. West *et al.* (1995) affirm that Skewness and kurtosis values should be less than ±2 and less than ±7, respectively. Therefore, the data for the entire variables in this study are found to be normally distributed as their values of Skewness and kurtosis are less than ±2 and less than ±7, respectively, as presented in Table 2 for descriptive statistics.

4.1. Correlation between the variables of the study
Correlation analysis analyses the nature of the relationship between the dependent and independent variables. It also gauges the level of multicollinearity amongst the variables under study. The Pearson correlation is employed to assess the effect of capital structure on firm value.

Table 3: Correlation matrix of variables

Variables	ROE	SPRICE	LTD	STD	EFF	SZ
ROE	1.000					
SPRICE	0.415***	1.000				
LTD	-0.261**	-0.300***	1.000			
STD	0.491***	0.070	-0.062	1.000		
EFF	0.634***	0.065	-0.309***	0.555***	1.000	
SZ	-0.265**	0.515***	-0.327***	-0.396***	-0.465***	1.000

Source: Researchers' analysis using STATA 14

From Table 3 above, long term debt has a significant negative correlation with (ROE) ($r = 0.020$; $p > 0.05$), share price (SPRICE) ($r = 0.007$; $p > 0.01$). Contrarily, short term debt (STD) is positive and significantly associated with ROE ($r = -0.000$; $p>0.01$), while insignificant and positively correlated with SPRICE ($r = 0.016$; $p > 0.10$). Furthermore, efficiency is significant and positively associated with ROE ($r = -0.000$; $p > 0.01$), while insignificant and positively correlated with SPRICE ($r = -0.214$; $p > 0.10$). Size, enters significant and negative with ROE ($r = 0.018$; $p < 0.05$), while significantly positively correlated with SPRICE at 1% statistical significance. Equally important, none of the correlation coefficient of the independent variables is above 0.80. Therefore, multicollinearity problem is addressed (Gujarati, 2009).

The absence of multicollinearity is substantiated based on tolerance values, which lies between 0.45 and 0.67, stands reasonably greater than the threshold of 0.1 (Hair *et al.*, 2014; Pallant, 2005). In the case of VIF, it ranges between 1.50 and 2.21, considerably less than the threshold of 10. Moreover, the mean value of the variance inflation factor is less than 5.

Consequently, Hausman tests for the models in this study revealed insignificant p-values, and thus, the null hypotheses were rejected, as shown in Table 4. Therefore, this study preferred the random effect models over the fixed effect models for inferences.

4.2. Multiple regression results

4.2.1. Model 1: capital structure and return on equity (ROE)

Table 4: Random effect regression results

Variables	ROE Model			SPRICE Model			Multicollinearity Test	
	Coef.	t	p>t	Coef.	t	p>t	VIF	Tolerance
Constant	1.043	2.22	0.027	-97.275	-1.83	0.067		
LTD	-0.178	-1.71	0.087*	-3.314	-1.27	0.204	1.61	0.62
STD	0.142	0.69	0.492	3.383	1.93	0.054*	1.50	0.67
EFF	0.113	1.32	0.186	8.755	5.21	0.000***	2.21	0.45
SZE	0.416	-2.16	0.030**	4.642	2.00	0.067*	1.89	0.53
No. of Obs.			80			80		
Groups			8			8		
Hausman χ^2			5.05(0.283)			0.07(0.999)		
Waldχ^2(3)			60.50			39.02		
p > Chi2			0.000***			0.000***		
R^2			0.3223			0.3807		

Source: Researcher's analysis using STATA 14

From the regression result in Table 4, the R^2 value for model one stands at 0.3223, indicating 32.23% of the changes in ROE of the sampled companies are attributed by explanatory variables in this study. Also, the model is significantly based on the Wald Chi^2 (60.50, $p < 0.01$), indicating goodness of fit and validity of the model utilized. Long term debt (LTD) appears significant and negative on return on equity (ROE) at 10% significance level ($\beta = -0.178$; $p < 0.10$). The economic implication is that for every 1 unit increase in long term debt, return on equity of listed industrial goods companies decreases by 0.178 (17.8%). The finding contradicts hypothesis 1a of this study. The result coincides with previous studies (Farhad and Atiasghar, 2013; Alawwad, 2013). In addition, finding coincides with agency theory, which predicts a negative relationship between debt and firm value. On the other hand, short-term debt (STD) has a positive but insignificant effect on ROE ($\beta = 0.142$; $p > 0.10$), which contradicts hypothesis 1b of this study. Moreover, the regression result under the ROE Model further shows that size has a significant effect on return on equity. Specifically, size (SZE) appears negative and significant at 5% statistical significance ($\beta = -0.416$; $p < 0.05$). It signifies that an

increase in the firm size of Nigerian industrial goods companies will decrease their return on equity by 0.416 (41.6%). Efficiency portrays insignificance; as such, it does not impact firm value in the sampled companies ($\beta = 0.113$; $p > 0.10$).

4.2.2. Model two: capital structure and share price (SPRICE)

The R^2 value for model two, based on Table 4, is 0.3807. It indicates that independent variables determine variations in the share price of the sampled companies by 38.07%. Likewise, the model is significantly based on the Wald chi^2 value of 39.02 and a p-value below 0.01. It indicates the goodness of fit and validity of the model utilized. The regression result from Table 4 portrays that long-term debt (LTD) has an insignificant negative effect on share price (SPRICE) ($\beta = -3.314$; $p > 0.10$). This has contradicted the statement of hypothesis 2a, which states that long-term debt has a positive relationship with the share price of listed industrials goods companies in Nigeria. However, short-term debt (STD) appears positive and significant at a 10% significant level. The implication is that for one unit increase in short-term debt, share price (SPRICE) of listed Nigerian industrial goods companies increases by 3.383(N3.383). Findings support hypothesis 2b, which states that short-term debt has a positive effect on the share price of listed industrial goods companies in Nigeria. Additionally, the regression result under the SPRICE Model also displays that efficiency and firm size (SZE) appears significant and positive at 1% statistical significance level ($\beta = 8.755$; $p < 0.01$) and 10% significance levels respectively ($\beta = 4.642$; $p < 0.10$).

5. CONCLUSIONS AND RECOMMENDATIONS

This paper aims to investigate the impact of capital structure on the firm value of listed industrial goods firms in Nigeria. Long-term debt significantly reduces the return on equity of listed industrial goods companies in Nigeria for the period under study. On the contrary, the short-term has an insignificant positive effect on return on equity. However, a significant positive effect was recorded on the share price. Hence, as listed manufacturing firms employ more short-term debt, their share price value improves. The study, therefore, concludes that capital structure has a mixed effect on the firm value of listed industrial goods companies in Nigeria. In line with the findings of this study, it is recommended that listed industrial goods companies in Nigeria should minimize the level of long-term debt in their capital structure to improve their share price and return on equity.

More so, managers should exercise caution while using debts as a source of finance since a negative impact existed between the long term debt and value in the industry. However, prudent management of corporate debts may increase future returns. In this respect, companies endeavor to finance their investment activities with retained earnings and short term debt. Long term debt should be the last option as supported by pecking order theory, which documents a hierarchical order in financing alternatives. However, despite the contribution of this study by empirically examining the effect of capital structure on firm value of listed industrial goods companies in Nigeria, it considers only those meet up with the criterion to form the adjusted population. Therefore, the findings and recommendations of the study may not apply to those firms outside the coverage of the study. Likewise, this paper considers only two proxies of capital structure (short-term debt and long-term debt) without considering other proxies that determine capital structure such as equity to asset, equity to loan, and equity to liability. Findings may differ if other variables were included. It serves as a platform for future studies.

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