Determinants of Capital Structure in Nigeria

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ABSTRACT: Capital structure represents one of the most discussed concepts in financial management. Capital structure refers to how a company finances its operations whether through shareholders equity-fund or debt or a combination of both. Various internal and external factors contribute to the choice of these sources of fund. The external factors include factors such as tax policy, capital market conditions and tax policy, among others. Meanwhile, the internal factors are those that relate to individual firm characteristics. This study examines the determinants of capital structure in Nigeria using the descriptive research design. The population comprised of the eighty-six manufacturing firms that are listed in the Nigerian Stock Exchange. The sample firms were selected using the simple random sampling method. Secondary data obtained from the annual accounts of 24 randomly selected manufacturing firms for 10 years period culminating in 240 firm-year observations. The results of the regression analysis revealed that leverage (a measure of capital structure) has a negative relationship with firm size and tax on one hand and a positive relationship with tangibility of assets, profitability and growth on the other hand. However, only with tangibility of assets and firm size that significant relationship is established. It is recommended for future researchers to carry out similar studies in multiple sectors.

KEYWORDS: Capital Structure, Leverage, Tangibility, Firm Growth, Manufacturing.

1   INTRODUCTION

One of the most repeatedly discussed subjects in financial management is that of organizations' capital structure [1]. A company's capital structure refers to how a company finances its operations whether through shareholders equity fund or debt or a combination of both [2]. It usually comprise of all the sources of finance a company is utilizing to finance its operations. Usually, capital structure is made up of ordinary share capital, preference share capital, and debt capital among others.

Literature revealed that various external and internal factors affect the capital structure of corporate organizations [1]. The external factors include factors such as tax policy, capital market conditions and tax policy, among others. Meanwhile, the internal factors are those that relate to individual firm characteristics. Capital structure theories have identified a wide range of internal factors potentially influencing capital structure choice [3]. Reference [1] identified some of these internal factors to include: firm size, profitability, assets tangibility, taxation, firm growth rate, and liquidity. However, [3] observed that the factors affecting capital structure vary from one country to the other due to variation in the level social, environmental, economic, technological and cultural development. As a result of this, finding from studies in one country cannot be reasonably generalized to other countries, thus calling for country specific studies.

1.1   STATEMENT OF THE PROBLEM

One of the tough challenges that organizations face is the choice of capital structure. Gill, Biger, Pai and Bhutani (2009) observed that the determinants of capital structure have been debated for several years and still remain one of the most significant unsettled issues in the field of corporate finance. Reference [6] reported that several studies have been conducted

on the determinants of corporate capital structure over the years. However, most of these studies were conducted in the advanced market economies such as USA and the UK, only limited studies have been carried out in emerging economies [7]. Moreover, the results of these prior studies have been inconclusive, controversial and open to further investigation [6]. In Nigeria in particular, only limited studies have been carried out on the determinants of capital structure in the manufacturing industry thus [8] recommended further studies. Therefore this study sets out to bridge this gap in knowledge by examining the determinants of capital structure in Nigeria.

1.2   OBJECTIVES OF THE STUDY

The main objective of this study is to ascertain the determining factors of capital structure of firms in Nigeria. Furthermore, the following are the specific objectives of this study:

1. To determine the influence of firm size on capital structure in Nigeria.

2. To investigate the influence of tangibility of assets on capital structure in Nigeria.

3. To examine the influence of profitability on capital structure in Nigeria.

4. To explore the influence of taxation on capital structure in Nigeria.

5. To examine the influence of growth on capital structure in Nigeria.

1.2.1   RESEARCH QUESTIONS

The following research questions have been raised on order to achieve the objectives of this study:

1. What is the influence of firm size on capital structure in Nigeria?

2. What is the influence of tangibility of assets on capital structure in Nigeria?

3. What is the influence of profitability on capital structure in Nigeria?

4. What is the influence of taxation on capital structure in Nigeria?

5. What is the influence of growth on capital structure in Nigeria?

1.2.2   RESEARCH HYPOTHESES

The following hypotheses have been formulated to determine whether or not the relationship between the dependent and each of the independent variables is significant.

Ho_i: There is no significant relationship between firm size and capital structure in Nigeria.

Ho_{ii}: There is no significant relationship between tangibility of assets and capital structure in Nigeria.

Ho_{iii}: There is no significant relationship between profitability and capital structure in Nigeria.

Ho_{iv}: There is no significant relationship between taxation and capital structure in Nigeria.

Ho_v: There is no significant relationship between growth and capital structure in Nigeria.

2   LITERATURE REVIEW

Several theories of capital structure have been highlighted in the literature. In their review of some theories of capital structure, [9] identified: MM theory, agency theory, trade-off theory, signaling theory, pecking order theory and free cash flow theory. Never the less, this study is anchored on the pecking-order and trade-off theories.

Reference [10] conducted a study on the determinants of capital structure in Pakistan. Secondary data from audited annual reports were obtained from the textile, chemical, fuel and energy sectors of the economy. Using leverage as the dependent variable while size, non-debt tax shield, growth, earnings volatility, profitability and tangibility of assets as the independent variables; the study employed correlation and regression analysis. The results revealed a negative relationship between earnings volatility, growth of firm, profitability and leverage on one hand, meanwhile a positive relationship was established between firm size, non-tax shield, tangibility of assets and leverage on the other hand.

Reference [11] investigated capital structure determinants in the United States service industry. Collateralized assets, profitability, non-debt tax shield, firm size, income tax, growth of firm were regressed against leverage. The results of the study revealed a negative relationship between profitability and leverage on one hand while a positive relationship was reported between effective income tax rate and leverage on the other hand. Meanwhile, no significant relationship was observed between non-debt tax shield, firm size, growth opportunity and leverage.

Reference [12] investigated the determinants of capital structure in 48 selected profit-making manufacturing firms in India. Data for the study were obtained from annual accounts of 2006 to 2010 period. The analysis was carried out using multiple regression models. The results of the study confirmed pecking order hypothesis, the leverage was found to be negatively related to profitability. Asset tangibility was found to be positively related to leverage. In contrast with theory, the tax rate was found to be negatively related to leverage.

Reference [13] examined the determinants of capital structure of 81 randomly selected Thai companies. Secondary data were obtained from the audited annual accounts of the selected firms from 6 industries during 2004-2008 periods. The analysis was carried out using correlation and regression analysis. After controlling for industry, the results revealed a significant relationship with the level of profitability, size, and tangibility. Negative relationship was observed with profitability and debt ratio; showing that companies with high profitability issue less debt. Positive relationship was observed with size and debt ratio; exhibiting that large companies issue high level of debt. Finally, a negative relationship was observed with tangibility and debt ratio; demonstrating that companies with high proportion of fixed assets to total assets issue less debt.

Reference [14] explored the factors that affect capital structure of manufacturing firms in Pakistani firms. The study set out to examine whether the capital structure models derived from developed economies provide persuasive explanations for capital structure decisions in the selected Pakistani firms. The investigation was conducted using panel data procedures for a sample of 160 firms listed on the Karachi Stock Exchange during 2003-2007. The results revealed that there is a negative relationship between debt ratio (as the dependent variable) and profitability, liquidity, earnings volatility, and tangibility (as independent variables); while firm size has a positive relationship with debt ratio. There was no significant relationship identified between the dependent variable of debt ratio and the independent variables of non-debt tax shields and growth opportunities. The study concluded that capital structure models derived from advanced economies does provide some help in understanding the financing behaviour of firms in Pakistan.

Reference [15] investigated the determinants of capital structure in Pakistan with focus on the cement industry. The study was based on 5 years financial data of the selected firms obtained from the State Bank of Pakistan publications. The sample comprise of 16 selected firms resulting into 80 firm-years which were subjected to panel data analysis. The independent variables of the study included tangibility of assets, firm size, growth of firm, and profitability; meanwhile leverage represented the dependent variable. The result of the regression analysis revealed a negative relationship with size and profitability on one hand, and positive relationship with tangibility and growth.

In Malaysia, [16] surveyed the determinants of capital structure among small and medium scale enterprises in Malaysia with data obtained from 50 award-winning enterprises from 1998 to 2010. The data analysis was carried out using regression analysis. Seven factors of: profitability, size, tangibility of assets, growth of firm, age of firm, non-debt tax shield and liquidity were considered in the analysis. The results of the study revealed in overall that three out of seven selected firm's characteristics (liquidity, tangibility of assets and non-debts tax shield) were found to have statistically significant relationship with firm's capital structure. Furthermore, all the three variables of liquidity, tangibility of assets and non-debts tax shield were also found to have ability in explaining variations in the firm's capital structure.

Reference [8] investigated the determinants of capital structure in Nigeria using panel data. Secondary data were obtained from 66 firms listed on the Nigerian stock Exchange during the period 1999-2007. The study analyzed six potential determinants of capital structure namely size, profitability, growth, tangibility, business environment and liquidity. Using regression analysis, the study reported a negative relationship between leverage (dependent variable) and each of growth, profitability, and tangibility of assets. However, a positive relationship was reported between leverage (dependent variable) and each of firm size and liquidity.

Reference [17] explored the determinants of capital structure of 88 public-listed companies in China. Six main factors of profitability, growth opportunities, size, asset structure, cost of financial distress, and tax shield were investigated. The data were subjected to correlation and regression analysis. The results of the study revealed a negative relationship with profitability, growth opportunity, and firm's size; meanwhile a positive relationship was found with tangibility. The study further disclosed that firm-specific factors when correlated with leverage has shown that neither the tradeoff model nor the

Pecking order hypothesis derived from the developed economies has strong explanatory power in elucidating the capital structure preference of firms in China.

Reference [18] explored the determinants of capital structure among 33 listed and non-listed companies during the period 2003-2007 in Ghana. Six factors of profitability, assets' tangibility, size of firm, business risk, growth and tax were examined. Multiple regression analysis of pooled-cross sectional and time-series observations was employed in the analysis. The results revealed that leverage has a positive relationship with profitability, assets tangibility, size, business risk on one hand; but a negative relationship was observed with growth and tax on the other hand.

Reference [19] studied the determinants of capital structure in Jordan. Secondary data were obtained from the annual reports of 30 companies that were listed in the Amman Stock Exchange between the period of 2001 and 2005. Five factors comprising of company size, tangibility of fixed assets, profitability, long-term debt to total assets, and short-term debt to total assets were examined. Using correlation and regression analysis, the results of the study revealed a positive relationship with company size, tangibility, long-term debt, and short-term debt, while a negative relationship was reported with profitability.

3   MATERIALS AND METHODS

This study employs descriptive survey research design in investigating the determinants of capital structure in Nigeria. The population comprised of the eighty-six manufacturing firms that are listed in the Nigerian Stock Exchange, out of which a sample size of twenty-four was obtained. The audited annual reports of twenty-four randomly selected manufacturing firms for ten year-period of 2003-2012 were used for the study; this amounts to 240 firm-year observations. The data were analyzed using correlation coefficient and regression analysis. The regression model is as follows:

$LEV = b_0 + b_1SIZE + b_2TANG + b_3PROFIT + b_4TAX + b_5GROWTH + \varepsilon$

Where:

LEV is measured as total liabilities divided by total assets.

SIZE measured by log of sales.

TANG measured as average total fixed assets divided by total assets.

PROFIT measured as operating income divided by total assets (ROA).

TAX measured by the ratio of tax paid to PBT

GROWTH measured as a percent change in sales.

4   RESULTS AND DISCUSSIONS

The results of the analysis are presented in this section with the discussion of findings. The analysis begins with a range of descriptive statistics on the dependent variable and the independent variables with minimum, maximum, mean and standard deviation presented in table 1. From the table, the mean leverage of this industry is 0.57571, profitability accounted for 0.22664, size 7.81224, tangibility 0.62924, tax 0.3997 and growth 0.23997. The standard deviation of leverage is 0.074041, profitability 0.085698, size 0.485305, tangibility 0.070879, tax 0.020892 and growth 0.180937. The result of minimum value ranges from 0.027 to 6.489 while that of maximum value ranges from 0.376 to 8.403.

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LEV	240	.325	.691	.57571	.074041
ROA	240	.027	.393	.22664	.085698
SIZE	240	6.489	8.403	7.81224	.485305
TANG	240	.507	.776	.62924	.070879
TAX	240	.276	.376	.32027	.020892
GROWTH	240	.077	.961	.23997	.180937
Valid N (listwise)	240				

Source: Output of data analysis by author

The results of the correlation reveal that firm's size and tax have negative relationship with leverage, meanwhile each of: profitability, tangibility of assets and growth has positive relationship with leverage. However, only with tangibility of assets and tax that significant relationship is established. Furthermore, a significant relationship is established between tangibility of assets and size, tax and size, tangibility of assets and tax, tangibility of assets and growth, and finally between tax and growth.

Table 2. Summary of Pearson Product Moment Correlations

	LEV	ROA	SIZE	TANG	TAX	GROWTH
LEV	1					
ROA	.008	1				
SIZE	-.005	.083	1			
TANG	.132*	.108	.806**	1		
TAX	-.200**	.087	.228**	.212**	1	
GROWTH	.031	-.028	-.078	-.212**	-.404**	1

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Table 3 below is a summary of the regression model used in this study. It reveals R^2 value of 0.10 meaning that only 10% of the variation in leverage can be explained by the degree of GROWTH, ROA, SIZE, TAX, and TANG.

Table 3. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.316[a]	.100	.081	.070982	.100	5.208	5	234	.000	2.371

Table 4 below further presents the coefficients of the models used in the study. The coefficient for size variable is -0.044 and shows a negative relationship between size and leverage. The coefficient for tax is -0.779 which shows that there is a negative relationship between tax and Leverage. The coefficient for growth variable is 0.0003 and shows a positive relationship with leverage of the firm. The coefficient for tangibility variable is 0.428 and shows a positive relationship with Leverage. The coefficient for ROA variable is 0.006 and shows a positive relationship with the Leverage. The overall model is statistically significant.

Table 4. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.894	.103		8.705	.000
	ROA	.006	.054	.007	.115	.908
	SIZE	-.044	.016	-.286	-2.650	.009
	TANG	.428	.114	.410	3.770	.000
	TAX	-.779	.247	-.220	-3.151	.002
	GROWTH	.003	.029	.008	.109	.913

a. Predictors: (Constant), GROWTH, ROA, SIZE, TAX, TANG. b. Dependent Variable: LEV

Table 5. ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.131	5	.026	5.208	.000[a]
	Residual	1.179	234	.005		
	Total	1.310	239			

a. Predictors: (Constant), GROWTH, ROA, SIZE, TAX, TANG. b. Dependent Variable: LEV

The results revealed that there is a positive relationship between Growth and Leverage in the selected firms, which suggests that internally generated funds are sufficient for the firms to meet their growing need, so they will use less debt. This result is consistent with that of [15]. However, the result contradicts those of [8], [17], [18]. This suggests that growing firms among the selected companies prefer to use funds from debt to finance growth. The growth variable with P value 0.031 is insignificant (at 0.05 level), thus we accept the null hypothesis and conclude that there is no significant relationship between growth of firm and capital structure in Nigeria.

The results also revealed that tangibility is positively related with leverage, which is also found by [19], [12], [10]. This suggests that the firms in this sector of the Nigerian economy having a large amount of fixed asset use more debt. The hypothesis of positive relationship of Tangibility with Leverage is accepted. Nevertheless, the results of this study contradict that of [8] who reported a negative relationship between tangibility of assets and leverage. The tangibility variable with P value 0.132 is significant (at 0.05 level), thus we reject the null hypothesis and conclude that there is significant relationship between tangibility of assets and capital structure in Nigeria.

Furthermore, the results revealed that there is a positive relationship between Profitability and leverage which supports the results of [18]. The results suggest that firms which are more profitable use more debt. On the other hand, the result contradicts that of [5], [12], [13], [10]. The profitability variable with P value 0.008 is insignificant (at 0.05 level), thus we accept the null hypothesis and conclude that there is no significant relationship between profitability and capital structure in Nigeria.

Additionally, the results revealed that there is a negative relationship between Size and leverage, which confirms the results of [17], [15]. However, the result contradicts that of [19], [18], [10]. The size variable with P value 0.005 is insignificant (at 0.05 level), thus we accept the null hypothesis and conclude that there is no significant relationship between size and capital structure in Nigeria.

Finally, a negative relationship between tax and Leverage is established in this study in line with the findings of [12], [18]. The result contradicts that of [11] who reported a positive relationship between tax and leverage. The tax variable with P value -0.200 is significant (at 0.05 level), thus we reject the null hypothesis and conclude that there is significant relationship between tax and capital structure in Nigeria.

5   CONCLUSION

This study examines the determinants of capital structure in the Nigerian manufacturing firms. Data were obtained from 24 selected manufacturing firms with a total 240 observations. The results of the analysis revealed that leverage (a measure of capital structure) has a negative relationship with firm size and tax on one hand and a positive relationship with tangibility of assets, profitability and growth on the other hand. However, only with tangibility of assets and firm size that significant relationship is established. Therefore, this study concludes as follows: (i) that there is no significant relationship between size, profitability, growth of firms and capital structure in Nigeria; (ii)   that there is significant relationship between tangibility of assets, tax and capital structure in Nigeria.

This study focuses on the manufacturing sector of the Nigerian economy. It is suggested for future researchers to conduct their studies with data from multiple sectors and compare the results among the sectors. This may provide evidence on the influence of industry on capital structure determinants.

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