THE DETERMINANTS OF CAPITAL STRUCTURE: EVIDENCE FROM CONSUMER AND INDUSTRIAL GOODS FIRMS IN NIGERIA

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Abstract

Firms as an engine of economic growth and development of nations are plagued with various predicaments in which sources of funds are paramount. The interest of business owners and investors are always on how fund is being raised by managers of the firms. Thus, this study investigated what determined the capital structure of both consumer and industrial goods sub sector of manufacturing firms in Nigeria. Panel data for all the listed consumer goods and industrial goods firms on Nigerian Stock Exchange (NSE) at November 21, 2016 were extracted and analysed with pooled ordinary least square (OLS), fixed effect and random effect models. The results showed that profitability, tangibility, asset turnover and exchange rate were reliable in explaining the capital structure of consumer and industrial goods firms in Nigeria. The study concluded that profitability tangibility, asset turnover and exchange rate were the major determinants of consumer and industrial goods firms in Nigeria. This study recommended that managers of consumer goods firms should model their capital structure decisions with tangibility and exchange rate as their pivot variables; while industrial goods firms' managers should lay emphasis on profitability and asset turnover. Also, regulatory agent of Nigerian capital market should encourage firms to raise more debt in the market by relaxing stringent requirements to participate in the market.
Key words: leverage, profitability, asset-turnover, consumer goods firms, industrial goods firm

Introduction

Capital structure constitutes the combination of equity and debt to finance a corporate firm. Business owners as well as debt-holders always expect their wealth to be maximized by the managers. In finance theory, capital structure is described as the mixture of equity and debt in financing the operation and activities of a firm such that the wealth of shareholders is maximized (Oloyede and Akinmulegun, 1999; Oloyede, 2001; Akinmulegun, 2012; Handood and Sharma, 2014; Pandey, 2015). Managers are required to carry out

financial decisions that will support the viability of the firms at the same time maximizing the shareholders' wealth. The decision is inevitable in any firm that strives to ensure that funds' suppliers are satisfied of which manufacturing firms in Nigeria are included. The choice and determinants of capital structure of a firm relied heavily on the expertise and analytical knowledge of the manager. The modern capital structure theory originated from the famous seminal paper presented by Modigliani and Miller (M-M) in 1958 on irrelevance of capital structure in determining the value of firm. The debate on capital structure has extended beyond these theories/approaches to exploring its determinants by both researchers and practitioners.

Firm is an economical unit that converts raw materials through the mechanical and chemical processes into a new output (product) (Owoeye, 2011; Babatunde, Owoeye and Abalana, 2014). Manufacturing sector being a sub-sector of industry plays a primary role in the development of national economy of the world. In Nigeria, the manufacturing firms are classified into different sub-sectors by the Nigerian Stock Exchange (NSE). Consumer and industrial goods sub-sectors were selected and examined in this study. These sub-sectors were of interest because of their contributions to the stock market performance within the period under review. What determine the proportionate combination of debt and equity of the consumer and industrial goods firms formed the centre piece of this study.

The study of the factors that determine the decision on combination of debt and equity formed another aspect of capital structure that has received an attention in the field of corporate finance. The performance of manufacturing firms in consumer and industrial goods sectors to a large extent depends on availability and management of finance. Thus, what determine raising funds from different sources to form the capital structure of firms require investigation? There are few considerable numbers of studies on capital structure and its determinants in Nigeria. These studies gave general recommendations on the determinants of capital structure without sectorial considerations.

This present study aimed to identify the significant sectorial specific and macroeconomic determinants of capital structure of consumer goods and industrial goods firms in Nigeria. The rest of the paper is divided into review of literature, research methods, results and discussion and conclusion.

Review of Literature

Firms do finance their assets through equity, debt, or a combination of both. It refers to as the mixture of debt and equity that a firm maintained (Gitman and Zutter, 2012). How a firm finances its assets through the combination of equity and debt connotes its capital structure (Pandey, 2015; Hirt, Block and Danielsen, 2014). Capital structure is a mix of debt and equity capital maintained by a firm. Keown, Scott, Martin and Petty, (1985) describe capital structure as a mix of sources of finance that shows in the liability part of the statement of financial position of a firm. Glen (2013) describes capital structure as a mixture of a company's debt (here, both long and short term), common stocks and preferred equity. It is how a firm finances its overall operations and growth by employing various sources of funds. It is also refers to as financial structure of a firm (Al-Shubiri, 2010).

In apportioning the capital, Romano, Tanewski and Smyrnios, (2000) identify four major parts of capital structure as Capital and retained earnings, family loans (these are common in small and medium scaled enterprises), debt and equity. In another vein, Gibson (2002) postulates five categories of sources of finance to be owner equity related person debt (case of small and medium scale firms), trade credit, bank loans and other debt equity

which can come inform of venture capital and government loans. Alternatively, Deakins, Whittam and Wyper (2010) recommend internal and external sources of finance. The three sources of finance available for firms as pointed out by Frank and Goya (2005) are retained earnings, debt and equity. These were found to be more appropriate for this study. The figure 1 below depicts the components of capital structure.

Figure 1: Components of capital structure
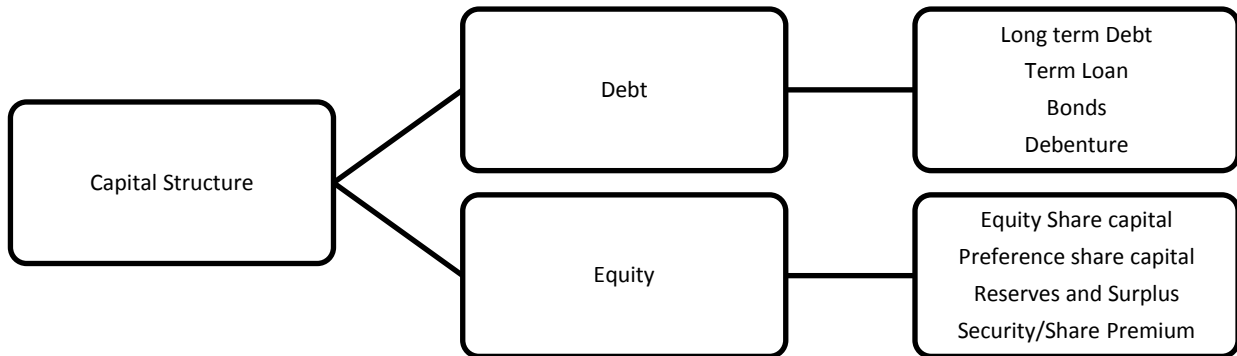
Sources: Author, 2018

Pandey, (2015) succinctly describes capital structure as the proportionate relationship between debt and equity, which maximizes the market value of the firm. While financial structure represents the equity and liabilities of a firm in one hand, capital structure represents the equity and long term finance on the other hand. Financial structure covers both the short term and long term liabilities while capital structure considers long term liability only. Capital structure is crucial for important decision for firms so as to maximize shareholders return. Hence, the choice of capital structure by firm varies according to different factors which include industry, tax policies, asset structure, cost of capital and risk. Equity ratio, debt ratio and solvability are the related indicators of capital structure (Proenca, Laureano and Laureano, 2014).

Under the measurement of capital structure, it is pertinent to note that leverage and gearing can be used interchangeably as capital structure (Fabozzi, Neave and Zhou, 2012; Oloyede, 2000). However, leverage is commonly used in America while gearing is preferred in United Kingdom. In most cases, leverage is used to measure capital structure of a firm, which this study also adopted. Leverage is described by Van Horne (1986) as the use of fixed cost (interest) funds by the firm with the anticipation for increasing the return to its ordinary shareholders. Firms with leverage are said to be trading on equity which means a firm is using equity financing to obtain debt financing in a desire to accumulate returns above the cost of debt. Debt ratio, debt-equity ratio and interest coverage are the major ways of measuring leverage (Paul and Paul, 2012; Ross, Westfield and Jordan, 2006; Brigham and Ehrhardt, 2002).

There are various useful theories on capital structure, of which each helps to demonstrate the understanding of the debt-to-equity structure that firms choose. These theories can be categorized into two groups. They either predict the existence of the optimal capital structure for each firm (so-called static trade-off models) or declare that there is absence of well-defined target capital structure (Bauer, 2004). Frank and Goyal, (2005) have contended that there is no universal theory of capital structure. The major theories of capital structure are Net Income Approach, Net Operating Income Approach,

Traditional Approach and Modigliani and Miller (M-M) Theory. Others are Static Trade-off Theory, Pecking Order Theory and Agency Theory.

Manufacturing Sector in Nigeria

Nigeria being the most populous nation in Africa with over one hundred and forty million people is endowed with expanse of land mass, forest resources with natural resources such as oil and gas, rivers and lakes, and solid minerals. These make the country to be a potential centre of production and consumption activities with promising economy (Anyanwu, 2008). Manufacturing sub-sector has been identified as the engine of economic growth, development and a pillar of sustainability of any country of the world (Aliu, 2010; Akinmulegun and Oluwole, 2014). The economic growth of a nation is usually gauged by its productive strength and ability to compete with others and the manufacturing sector represent this productive strength. If a country is to have a strong manufacturing base, such country must be able to accumulate wealth as well as boosting its gross domestic product (GDP).

Nigeria's manufacturing sub-sector comprises of sugar confectionery, softdrinks, beer & stout, cotton textile, synthetic fabrics, foot wear, paints, refined petroleum, cement, roofing sheets, assemblying of vehicle, soap & detergent and radio & television. Presently, the Nigerian Stock exchange (NSE) classified all quoted firms in Nigeria into twelve sectors which are Agriculture, Construction/Real Estate, Consumer Goods, Financial Services, Health Care, Industrial Goods, Information & Communications Technology, Natural Resources, Oil & Gas, Services, Utilities and Conglomerates (NSE, 2015). The stock market performance showed that the consumer and industrial goods sectors had the highest All Share Index (ASI) in 2015 which make this study to concentrate on these sectors. Besides, the two sectors also employ greater percentage of working population in Nigeria (NBS, 2015).

Determinants of Capital Structure

In literature, various determinants of capital structure which are classified as firm-characteristics with few non-firm-specific determinants have been identified. These determinants are endless (Song, 2005) and researchers have being selecting different sets of these determinants based on different arguments/theoretical backgrounds of their studies. However, in this study, firm size, profitability, liquidity, growth, asset structure and efficiency as firms' characteristics as well as inflation rate, exchange rate and GDP growth rate (macroeconomic environment) are examined in this study.

Firm Size

Size has been identified as one of the determinants of a firm's capital structure. The relationship between the size and leverage of a firm has two different views. One view shows that large firms do not consider bankruptcy costs as a pivot variable in deciding the level of combination of debt and equity because these costs are fixed by rules and constitute a smaller part of the total firm's value. Also, larger firms' ability to diversify has lesser chances of bankruptcy (Titman and Wessels 1988; Barclay, Smith and Watts, 1995; Al-Sakran, 2001; Cassar and Holmes, 2003; Esperanca, Ana and Mohamed, 2003). Based on this, it may be expected that a positive relationship between size and leverage of a firm should exist. Contrarily to first view, Rajan and Zingales (1995) contended that there is less asymmetrical information about the larger firms. This reduces the chances of undervaluation of the new equity issue and thereby encourages the large firms to make use

of equity financing. That is, there should be negative relationship between size and leverage of a firm.

Profitability

The pecking order theory assumed to be the best theory to explain the relationship between profitability and capital structure of a firm. According to this theory, firms arrange their financing such that internal equity is exhausted before seeking external finances. This occurs because profitable firms have access to large unused retained earnings that are available for future investment. Murinde, Agung and Mullineux (2004) stated that, retained earnings formed the principal source of finance. Barton, Hill and Sundaram (1989) suggested that firm with huge profit would engage low debt ratio since they have access to retained earnings. On the other hand, Jensen and Mackling (1986) argued that the existing relationship between leverage and profitability depends on the effectiveness of the market for corporate control. Many researchers support a negative relationship between profitability and capital structure (Mishra and McConaughty, 1999; Jordan, Lowe and Taylor, 1998; Chittenden, Hall and Hutchinson, 1996).

Asset Structure (Tangibility)

As described by Harris and Raviv (1991) and Titman and Wessel, (1988), the firm's liquidity value depends on the relative degree of tangibility of its assets. This can be measured by the ratio of tangible assets to total assets. Firms with tangible assets can easily use their assets as collateral for loans. Researches such as Storey (1994); Berger and Udall (1998) support the fact that firms with highly tangible asset borrow easily from banks. As a result of this, a positive relationship is expected between asset structure and debt ratios. Empirical studies by Abor, (2008); Mackie- Mason (1990); Havakimian, Hovakimian and Tehranian (2004) Myer and Magluf (1984) all point to a positive relationship between asset structure and firm's leverage. From the foregoing, a positive significant relationship is predicted between tangibility of assets and leverage.

Growth

The pecking order theory hypothesis posited that, a firm will first employ internally generated funds which may not be enough for a growing firm. The next option for the growing firms is to use debt financing which means that a growing firm will have a high leverage (Drobetz and Fix 2003). The agency costs on the other hand, for growing firms are expected to be higher because these firms have more flexibility with regard to future investments. Growing firms, thus, facing higher cost of debt will use less debt and more equity. In line with this, Titman and Wessels (1988), Barclay *et al*. (1995) and Rajan and Zingales (1995) all find a negative relationship between growth opportunities and leverage. It was argued that the agency problem and the cost of financing can be reduced if the firm issues short-term debt rather than long term debt. Empirical evidence seems inconclusive in this regard as there is much controversy about the relationship between growth rate and level of leverage. This can be measured by percentage change in total assets.

Liquidity

In the case of liquidity and leverage, the trade-off theory was of the opinion that a positive relationship exists between leverage and liquidity because higher liquidity ratio can support a relatively higher debt ratio due to greater ability of a firm to satisfy short-term contractual obligations on time, but the pecking order theory has a contrary view. The pecking order theory believes a negative relationship exist between liquidity and leverage.

This is because firms with enough liquidity may use internally available fund to finance investment. Empirical studies in support of this finding include Mazur (2007) and Viviane (2008). Liquidity (LIQ) is measured as ratio of Current Assets and Current Liabilities.

Efficiency

Efficiency describes the concepts that relate to the use and maximization of all resources in the production process of goods and services (Mursalim, Sanusi, Hendragunawan and Alamzah (2017). This is when all available resources are fully utilized and the style of the user is at maximum such that no other means can provide additional output. Financially, efficiency refers to how well the fund invested produces revenue to the firm. This could be measured by dividing the turnover by the total assets of the firm.

Inflation Rate

Inflation rate represents the control variable that explains the environment where the firms operate. Gulati and Hangout (1997) opined that profitability and ability of firms to absorb financial distortions are affected by inflation especially in terms of cost of goods sold, sales and production cost. Capital structure policy was suggested as a strategy to mitigate the effect of inflation on corporate firms. This necessitated the inclusion of inflation as one of the determinants of capital structure of manufacturing firms in Nigeria which would address a gap. Studies have shown that positive relationship exists between inflation rate and capital structure of banks and statistically significant especially when it is predicted (Anarfo, 2015; Molyneux and Thornton, 1992). In order to discover the effect of macroeconomic factor on the choice of capital structure of consumer and industrial manufacturing in Nigeria, this study hypothesised that inflation rate will affect the use of debt by the firms.

Exchange Rate

Exchange rate is described as the number of units of a nation's currency that can be acquired with a unit of another currency (Bodie, Kane and Marcus, 2003). The exchange rate which has deep effect on the price level in any nation usually reflects the demand and supply of currencies in the foreign exchange market. Its effect on domestic prices affects the interest of investors (especially foreign investors) in the country. A firm that borrows from foreign investors must consider the exchange rate risk (Dominguiez and Teser, 2006). Both the firms and investors could hedge themselves against the risk. Shareholders would always prefer managerial compensation contracts that would maximize the value of the firm. In this study, it is expected that exchange rate would be significant in determining the capital structure of firms in consumer and industrial goods sub-sectors in Nigeria.

Gross Domestic Product (GDP) Growth Rate

The GDP growth rate of a nation indicates the available growth opportunities for firms in such economy. In finance, there exists debate on the relationship between economic growth rate and financial sector of a nation. Rajan and Zingales (1995) revealed that industries relying more on external financing sources will excel in countries with improved financial markets. Smith and Watts (1992) opined that economic growth of a nation is expected to be positively related with leverage of the firms. This study expected positive relationship between GDP growth rate and capital structure of consumer and industrial goods firms in Nigeria.

Research Methods
Data and Data Sources

This study is quantitative in nature. Secondary data were used. It examined the determinants of leverage of Consumer Goods and Industrial Goods manufacturing firms in Nigeria by adopting panel data regression analysis. All the forty-three (43) quoted

manufacturing firms of Consumer Goods sector (Twenty-five-25) and Industrial Goods sector (Eighteen-18) based on Nigerian Stock Exchange (NSE) classification of quoted firms in Nigeria were used in this study.

Data were gathered from Nigerian Stock Exchange (NSE) fact-book of various issues and annual reports and statements of account of the firms under consideration for the period of 2006 to 2015 both years inclusive. On error-free data, this study relied heavily on the Nigerian Stock Exchange (NSE) being the regulatory agent to ensure that firms prepare their accounts in line with required standard.

Model Specification

The basic framework for a regression model is in form of:

$$Y_{it} = \text{ᴧ} + \beta X_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots \text{ i}$$

Where:

Y= Leverage of the firms and represents the dependent variable in the model i.e the firm's debt ratios.

ᴧ = the constant, intercept of the equation,

β = represents the coefficients for the explanatory variables in the estimated model,

X_{it} = the vector of explanatory variables in the estimation model,

ε_{it} = the error term.

The fundamental advantage of panel data set over a cross section data is that it equips the researcher with great flexibility in modeling differences in behavior across individual firm. A multiple pooled regression analysis used was based on the works of Akinlo, (2011) and Lawal *et al,* (2014) with modification in terms of variables used. The model for this study is therefore presented in a relational form as follows:

Leverage = ʄ(size, tangibility, profitability, liquidity, growth, Asset Turnover, Inflation rate, Exchange rate, GDP growth rate)……………. ………………….. ii

With the assumed multiple linear expressions, pooled OLS, fixed effects and random effect models were examined using the explicitly equation stated as follows:

$$Lev_{it} = \beta_0 + \beta_1 Siz_{it} + \beta_2 Tan_{it} + \beta_3 Prof_{it} + \beta_4 Liq_{it} + \beta_5 Gwth_{it} + \beta_6 Astv_{it} + \beta_7 Infr_t + \beta_8 Exr_t + \beta_9 Gdpgr_t + \varepsilon_{it}$$
$$\dots\dots\dots\dots\dots\dots\dots \text{ iii}$$

Where;

Lev_{it} = Leverage i.e capital structure of firm i over time t

Siz_{it} = Size of firm i over time t

Tan_{it} = Tangibility of firm i over time t

$Prof_{it}$ = Profitability of firm i over time t

Liq_{it} = Liquidity of firm i over time t

$Gwth_{it}$ = Growth of firm i over time t

$Astv_{it}$ = Asset Turnover of firm i over time t

$Infr_t$ = Inflation rate over time t

Exr_t = Exchange rate of Naira/US Dollar over time t

$Gdpgr_t$ = Growth rate of Gross Domestic Product (GDP) over time t

β_0 = constant term

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ and β_7 = estimating parameters

ε = error term.

On *a priori*, the relationship between capital structure and the determining factors are expected to be as:

β_1, β_2, β_5 β_7 and β_9 >0 while β_3, β_4 β_6 and β_8 <0

Estimation Technique

Here, pooled, fixed effect and random effect regression models were employed to estimate the determinants of capital structure of manufacturing firms in Nigeria. The data underwent preliminary analyses that involve descriptive statistics and formal test, in order to identify parsimonious model of estimation. Also, post-estimation analyses with relevant diagnostic test which include serial correlation (LM Test- Breusch-Godfrey), multicollinearity test and heteroscedasticity (Breusch-Pegan-Godfrey test) were used in this study.

Results and Discussions

Summary of Descriptive Statistics

The summary statistics showed some statistical properties of the variables for consumer goods firms and industrial goods firms.

Table 1: Summary Statistics for Consumer Goods Firms

Variable	Mean	Minimum	Maximum
Lev	0.2676	-0.9507	5.1800
Prof	0.0771	-2.4850	1.4113
Tan	0.5335	0.0064	1.0000
Siz	6.9690	4.0282	8.6234
Liq	1.1035	0.0000	18.4404
Grwth	0.3403	-0.7861	18.1335
Ast	1.5191	0.0000	35.7757
Inf	11.6583	5.3800	18.8700
Exr	141.8700	111.9433	193.2792
Gdpgr	19.1322	5.7290	39.31713

Source: Author's compilation (2018)

Table 1 showed that the mean value of Leverage (Lev) was approximately 0.27, which is less than one. This indicated that, there was more equity in capital structure of consumer goods firms. The leverage values ranged between a minimum value of -0.9507 and a maximum of 5.18. Normally, the minimum value of leverage should be zero, because firms were not expected to have negative debt or equity usage. Profitability (Prof) had a mean value of approximately 0.08 and this indicated that, on the average, the Consumer goods firms were relatively profitable. Also, the mean value of Profitability (Prof) suggested that consumer goods firms earned 7.7% of total assets on the average with minimum value of -2.485 and maximum value of 1.4113. The mean value of tangibility (Tan) was approximately 0.53 and this indicated that the sampled consumer goods firms had more fixed assets in their asset composition on the average. Size (Siz) had a mean value of approximately 6.97. There was large variance between the minimum and maximum values of Size (Siz) and this indicated that the manufacturing firms in the sample relatively differed in size.

The mean value of liquidity (Liq) was approximately 1.10 and this indicated that, on the average, the sampled consumer goods firms were capable of meeting their working

capital needs over the period studied. Growth (Grwth) had a mean value of approximately 0.34 and this showed that the sampled consumer goods firms had the ability to exploit growth opportunities during the period under review. The mean value of asset-turnover (Astv) was approximately 1.52 and this showed that, on the average, the consumer goods firms in the sample recorded slightly higher sales relative to their total assets. The mean value of inflation rate (Inf), exchange rate (Exr) and GDP growth rate (Gdpgr) were approximately 11.66%, ₦141.87 and 19.13%, respectively.

Table 2: Summary Statistics for Industrial Goods Firms

Variable	Mean	Minimum	Maximum
Lev	0.2054	0.0000	1.4956
Prof	0.0981	-0.6828	1.4695
Tan	0.5105	0.0786	1.0000
Siz	6.3753	3.4854	8.6561
Liq	1.3790	0.0000	15.9331
Grwth	0.2925	-0.7588	6.5853
Ast	14.4801	0.0000	503.8446
Inf	11.7583	5.3800	18.8700
Exr	142.0643	111.9433	193.2792
Gdpgr	19.1624	5.7290	39.3171

Source: Author's compilation (2018)

Table 2 showed that the mean value of Leverage (Lev) was approximately 0.21, which is less than one. It showed that, there was more equity in capital structure of industrial goods firms. The leverage values ranged between a minimum value of 0 and a maximum of 1.5. This displayed the normal case of capital structure. Profitability (Prof) had a mean value of approximately 0.1 (10%) and this indicated that, on the average, the industrial goods firms were relatively profitable. Also, the mean value of Profitability (Prof) suggested that industrial goods firms earned 10% of total assets on the average with minimum value of -0.6828 and maximum value of 1.4695. The mean value of tangibility (Tan) was approximately 0.51 and this indicated that the sampled industrial goods firms had more fixed assets in their asset composition on the average. Size (Siz) had a mean value of approximately 6.38. There was large variance between the minimum and maximum values of size (Siz) and has indicated that the manufacturing firms in the sample relatively differed in size.

The mean value of liquidity (Liq) was approximately 1.38 and this showed that, on the average, the sampled industrial goods firms were capable of meeting their working capital needs over the period studied. Growth (Grwth) had a mean value of approximately 0.29 and this indicated that the sampled industrial goods firms had the ability to exploit opportunities to grow during the period under review. The mean value of asset-turnover (Astv) is approximately 14.48 and this indicated that, on the average, the industrial goods firms in the sample recorded higher sales relative to their total assets. The mean value of inflation rate (Inf), exchange rate (Exr) and GDP growth rate (Gdpgr) were approximately 11.76%, ₦142.06 and 19.16%, respectively.

Tests for Multicollinearity

Multicollinearity occurs when there is evidence of strong linear relationship among the independent variables in a regression model. The test for multicollinearity in this study was determined by performing the Variance Inflation Factors (VIF) test. Variance inflation

factor VIF is widely used method to test for multicollinearity; it measures the increase in the variance of a coefficient as a result of collinearity. Also tolerance (TOL) is a commonly used measure of collinearity and multicollinearity. It is represented by 1-R*, where R* is the coefficient of the determination for the prediction of a variable by other independent

Variables. As a tolerance value becomes smaller, the variable tends towards being highly predicted by other independent variables.

Variable inflation factor is directly related to the tolerance value (VIF=1/TOL). More than10 for VIF values or TOL less than 10 indicates high degrees of collinearity or multicollinearity among the independent variables (Hair, Babin and Talham, 2006). Variables are tested for multicollinearity using state software for each relationship testing the values of variance inflation factor (VIF). Using the VIF test, the rule of thumb is that the VIF for a variable must not exceed 10 to confirm that the variable is not highly collinear. Table 4 presents the result of the VIF test.

Table 4: Multicollinearity Test

	Industrial Goods	Consumer Goods
Variable	VIF	VIF
Prof	1.06	1.39
Tan	1.20	1.30
Siz	1.16	1.53
Liq	1.14	1.31
Grwth	1.07	1.06
Ast	1.18	1.20
Inf	1.46	1.46
Exr	2.13	2.10
Gdpgr	2.69	2.63

Source: Author's compilation (2018)

From Table 4 above, it could be seen that all the variables had a VIF less than 10, which suggested the independent variables in the regression models were not strongly related to each other. As result, VIF results were acceptable and proved that the data was free of multicollinearity.

Presentation of Empirical Results

The pooled OLS, fixed-effects and random-effects regression models were estimated. The estimation results of regression models specified in section three of this study for the consumer goods manufacturing firms and industrial good manufacturing firms have been presented as they were used to achieve the objectives of the study.

Table 5: Estimation Results for Consumer Goods Firms

Variable	Pooled OLS	Fixed Effects	Random Effects
Constant	0.0160(0.967)	0.0368(0.953)	0.0143(0.971)
Prof	0.0207(0.840)	-0.1280(0.278)	-0.0045(0.966)
Tan	0.1111(0.334)	0.4057(0.012)**	0.1588(0.187)
Siz	0.0731(0.043)**	0.0602(0.466)	0.0713(0.072)***
Liq	-0.0182(0.430)	0.0015(0.952)	-0.0130(0.574)
Grwth	0.0006(0.974)	-0.0032(0.852)	-0.0001(0.996)

Ast	-0.0029(0.774)	-0.0174(0.134)	-0.0049(0.630)
Inf	0.0124(0.199)	0.0124(0.185)	0.01238(0.191)
Exr	-0.0024(0.202)	-0.0030(0.023)**	-0.0025(0.179)
Gdpgr	-0.0047(0.321)	-0.0045(0.953)	-0.0047(0.309)

Model Diagnostics

F-statistic	1.14(0.3340)	4.28(0.0002)*	19.31(0.0194)**
Breusch-Pagan LM test	4.27(0.0194)**		
Hausman test		22.61(0.0071)*	

Notes: *, ** and * denotes statistically significant at 1%, 5% and 10% significance level respectively. Also, p-values are reported in parentheses.**
Source: Author's compilation (2018)

The Breusch-Pagan LM test for random effects rejected the hypothesis that the variance of the random effects is zero and this has suggested that pooled OLS model is not appropriate. The Hausman test that produced a chi-square of 22.61 with a p-value of 0.0071 indicated that the null hypothesis of systematic difference between the fixed-effects and random-effects estimates was rejected. The implication of this was that the fixed effects model produced better and consistent estimates than the random effects model, hence fixed effects model was appropriate and its findings were better.

The empirical results in Table 4.5 above showed that tangibility was the only firm-specific factor that was significantly related to leverage of consumer goods manufacturing firms in Nigeria. Tangibility was positively related to leverage and this indicated that increase in tangibility caused an increase in firm's leverage. Also, the empirical results showed exchange rate as the only macroeconomic factor that was significantly related to leverage of consumer goods manufacturing firms in Nigeria. Exchange rate was negatively related to leverage and this implied that leverage reduces as exchange rate increases.

Table 6: Estimation Results for Industrial Goods Firms

Variable	Pooled OLS	Fixed Effects	Random Effects
Constant	-0.2750(0.145)	0.6297(0.117)	0.0077(0.976)
Prof	-0.2506(0.000)*	-0.2493(0.000)*	-0.2312(0.000)*
Tan	0.0505(0.291)	0.0127(0.838)	0.0311(0.585)
Siz	0.0428(0.015)**	-0.0964(0.126)	0.0052(0.884)
Liq	-0.0074(0.343)	-0.0086(0.204)	-0.0088(0.187)
Grwth	0.0100(0.498)	-0.0176(0.173)	-0.0193(0.125)
Ast	0.0003(0.138)	0.0008(0.002)*	0.0005(0.014)**
Inf	-0.0023(0.626)	-0.0032(0.411)	-0.0025(0.517)
Exr	0.0012(0.186)	0.0016(0.060)***	0.0011(0.158)
Gdpgr	0.0034(0.142)	0.0015(0.459)	0.0026(0.172)

Model Diagnostics

F-statistic	3.55(0.0004)*	3.53(0.0005)*	29.22(0.0006)*
Breusch-Pagan LM test	119.83(0.0000)*		
Hausman test			5.36(0.8022)

Notes: *, ** and * denotes statistically significant at 1%, 5% and 10% significance level respectively. Also, p-values are reported in parentheses.**

Source: Author's compilation (2018)

The Breusch-Pagan LM test for random effects rejected the hypothesis that the variance of the random effects was zero and this suggested that pooled OLS model was not appropriate. The Hausman test produced a chi-square of 5.36 with a p-value of 0.8022, has indicated that the null hypothesis of systematic difference between the fixed-effects and random-effects estimates was not rejected. This implied that the random effects model produced better and consistent estimates than the fixed effects model, thus random effects model was appropriate and its findings were relied upon.

Among the firm-specific factors, profitability and asset-turnover ratio were significantly related to leverage of industrial goods manufacturing firms in Nigeria. Profitability was negatively related to leverage and this indicated that an increase in profitability caused a decrease in leverage of industrial goods manufacturing firms. Hence, the industrial goods manufacturing firms followed a pecking order theory of capital structure. Asset-turnover was positively and significantly related to leverage and this implied that leverage of industrial goods manufacturing firms' increased as asset-turnover ratio increased. The empirical results showed that none of the macroeconomic factors of inflation rate, exchange rate and growth of GDP were significantly related to leverage of industrial goods manufacturing firms.

Discussion of Findings

Based on the results on Table 5 and 6, the relationships among these variables and their effects on the capital structure of consumer and industrial goods firms in Nigeria were explained. The Hausman tests indicated that fixed effects model and random effects model were to be used for consumer goods firms and industrial goods firms, respectively.

The preferred model (fixed effects) for the consumer goods firms showed a negative relationship between profitability and leverage, though not significant. The random effects model for the industrial goods firms indicated an inverse relationship between profitability and leverage. Meanwhile, profitability was only significant under industrial goods firms at 1 per cent level. This finding confirmed the pecking order hypothesis which postulated that more profitable companies were assumed to finance their investments with internally generated and available funds rather than employing debt. That is, more profitable companies had more internal funds thereby reducing the need for external financing. This result was in line with several previous studies which include; Rajan & Zingales (1995), Hall, Hutchinson and Michaelas (2004), Salawu (2007), Akinlo (2011) and Onaolapo, Kajola and Nwidobie, (2015).

Hypothetically, it was assumed that tangible assets were used as guarantee for bargaining for debts and thereby lowered the risk of creditors in case of bankruptcy. The results showed that tangibility (that is; asset structure) had a positive relationship with leverage in all the categories of samples understudied. Tangibility was significant under Consumer goods firms while it was insignificant under industrial goods firms. The results indicated that manufacturing firms (in categories of consumer goods and industrial goods sectors) in Nigeria used tangible assets as collaterals while bargaining for long term borrowings. This finding supported both theories (pecking order theory and trade off theory). The results followed the path of previous literature such as Harris and Ravis (1991), Onaolapo *et al* (2015). On the other hand, Booth *et al* (2001), Huang and Ritter (2007), Akinlo (2011), found a negative correlation between leverage and tangibility.

As shown in Table 5 and 6, size was found to be positively related with leverage in all the preferred models across the categories of samples investigated. This suggested that large firms could successfully acquire more debts than small firms. It was evidenced that size would determine capital structure of consumer goods and industrial goods manufacturing firms in Nigeria. These results were consistent with various studies which include: Huang and Ritter (2007), Salawu, (2007) and Akinlo, (2011). They all found a positive relationship between size and leverage. This thus implied that size of the firms encouraged the use of debt sources of financing.

Liquidity was only found to be positively related with leverage under consumer goods firms while negatively related with industrial goods firms based on the preferred models accordingly. It should also be noted that liquidity was not statistically significant in all the categories of samples examined. The negative relationship of liquidity with leverage in industrial goods firms postulated that manufacturing firms tended to use their liquid assets to finance their investment opportunities in preference to raising external funds. Booth, Aivazian, Demirguc-Kunt and Maksimovic, (2001), Deesomsak, Paudyal and Pescetto (2004) also found similar results.

Negative relationship between growth of the firm and leverage was observed in all the categories of samples based on preferred models of fixed effects model for consumer goods firms and random effects model for the industrial goods firms. Furthermore, the negative relationships were found to be insignificant statistically in all results as also reported by Onaolapo *et al.,* (2015). Manufacturing firms with reasonable growth seemed to have had lower leverage. This finding was in tandem with the postulation that firms with high growth would use more equity. The findings showed that manufacturing firms in Nigeria with high growth contracted fewer debts in financing their investment. The result was in line with the studies of Rajan and Zingales (1995), Anarfo (2015). On the other hand, the result therefore contradicted the studies of Chittenden, *et al,* (1996) and Salawu, (2007).

Asset-turnover ratio which was used as a measure of efficiency in the sampled manufacturing firms in Nigeria showed negative relationship with capital structure of the firms under consumer goods sector. This implied that the more efficient the firms in their performance, the less debt employed in financing their investment. On the other hand, it thus showed a positive relationship with leverage of firms under the industrial goods sector. Also, the positive relationship was significance at 5 per cent level. The findings of this present study showed that efficiency of the firms examined encouraged the use of external debt in their financing decision.

Inflation rate was found to be positively related with leverage of consumer goods firms as shown in Table 5. This thus implied that consumer goods manufacturing firms used more debt during inflationary period in Nigeria. This was in tandem with the work of Molyneux and Thornton (1992). Contrarily, leverage of industrial goods firms was found to be negatively related with inflation rate. The implication was that manufacturing firms under industrial goods sector used less debt when there was higher inflation rate. In both results, none was found to be statistically significant. The findings were in line with the previous study of Anarfo (2015).

In case of consumer goods manufacturing firms, the results indicated that a negative significant relationship existed between exchange rate and their leverage. The relationship was significant at 5 per cent level of confidence and it implied that as the exchange rate increased, the consumer goods manufacturing firms employed less debt finance. High

exchange rate had discouraged the use of external finance. On the contrary, the exchange rate showed a positive relationship with the leverage of industrial goods manufacturing firms in Nigeria. It was evidence that the available offshore funding arrangements influenced the supply of domestic currency. This was suggestive that the higher the exchange rate, the higher the debt finance used by the firms. Though, the relationship was not significant. The mixed results were evidence that determinants of capital structure of consumer goods manufacturing firms differed from that of industrial goods manufacturing firms in Nigeria.

Under the consumer goods sector, manufacturing firms' leverage showed a negative relationship with gross domestic product (GDP) growth rate. This result connoted that consumer goods manufacturing firms used less debt when the economy was growing. This meant that the firms followed pecking order theory of capital structure. In another way round, the industrial goods firms engaged more debt when the economy was growing. Also, all the results were not statistically significant. While consumer goods firms followed the path of the work of Smith and Watts, (1992), the result of the industrial goods firms proved otherwise

Conclusion

This study examined the determinants of capital structure of consumer goods and industrial goods manufacturing firms in Nigeria between the period of 2001 and 2015. The results of this empirical study had identified determinants of capital structure that would be applicable to consumer goods and industrial goods manufacturing firms in Nigeria. Such that, certain firm-specific factors that have been relevant for explaining capital structure in the Western countries were also relevant in Nigeria despite profound institutional differences that existed between Nigeria and other countries (developed and developing countries). Overall, the empirical results from this study offered some support for the Pecking Order Theory and Static Trade-off Theory of capital structure.

In accordance with results which were confirmed by the present study, the following recommendations have been made. It was recommended that managers of consumer goods manufacturing firms in Nigeria should be concerned with their asset structure-tangibility in deciding the structure of their capital. While, managers of industrial goods manufacturing firms should be interested in profitability and asset-turnover ratio (efficiency) of the firm while deciding their financing mix. It was also recommended that relevance policies and guidelines that would encourage participation of the firms in the long term debt section of capital market should be instituted by the Nigerian Stock Exchange/ Securities and Exchange Commission.

Besides, exchange rate was found to be a significant macroeconomic determinant of capital structure of consumer goods manufacturing firms. Therefore, the study recommended that monetary authority should maintain an appropriate economic friendly exchange rate as this would equip the managers in judicious mixing of debt and equity in their capital structure decisions. Finally, further work is recommended to develop new hypotheses and design new variables to confirm the influence of country-specific factors (such as inflation rate, exchange rate) on capital structure of corporate firms. In addition, a more detailed work that studies the effects of the geographical location of the firms and ongoing global economic trend on the capital structure decision of Nigerian manufacturing firms will help in resolving some theoretical underpinnings of these results as obtained in this study.

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