

## DETERMINANT OF THE FINANCIAL STRUCTURE OF MANUFACTURING FIRMS IN A DEVELOPING ECONOMY: A STUDY OF SELECTED LISTED MANUFACTURING FIRMS IN NIGERIA

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### Abstract

This study principally interrogates what drives the financial structure of listed firms in an emerging economy, using Nigeria as a paradigm. The study specifically sought to examine the effects of selected major financial variables namely - assets tangibility, profitability and the size of the firms on their financial structure decision. The valid data used in study covered eight selected manufacturing listed firms in the Nigerian Stock Exchange. The study however adopted trade-off theory in the theoretical framework. In the methodology, we employed pooled ordinary least square (POLS) approach. The outcome of the study revealed that size of a firm is a major determinant of financial structure in Nigeria emerging economy for the period under study. From our analysis, p-values of other factors examined such as profitability and asset tangibility showed no significant effect. The study therefore, concluded that high costs of floating shares and bureaucracies in the listing procedures formed some of the challenges faced by these companies while making or adjusting the pattern of their financial structures. The paper recommended that the Nigeria Stock Market should be made operators and investment friendly by reducing the floating costs and effects changes to the stringent listing conditions.

**Keywords:** Financial structure, Corporate finance, Economy, Asset.

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## **1.0 Introduction**

Over the years, corporate financial structure is among the most researched and topical issue in corporate financial management. Yet, till date, the debate of what drives corporate financial structure is inconclusive. The reason is not farfetched. First, finance is the corner stone for the success and growth of every business firms globally. Second, it underscores the importance of financial structure in corporate finance and corporate existence. Third, the sources and procurements of fund have remained one of the challenging problems faced by firms and it has continued to affect the essential contributions of some sectors in the area of job creation, provision of goods and services, economic growth and improvement to technological capacity due to the costs of finance and other operational costs (Akingunola and Oyetayo, 2014).

Suffice it to say therefore, that financial structure is a financing arrangement that determines how and the amount of finance that can be obtained from funds-providers by the business organizations. This means how a company finances its operations whether through shareholders equity or debt or a combination of both. It usually comprises the entire sources of finance that a company is utilizing to finance its operation. Succinctly put, the entire means through which firms or companies finance its assets such as trade credit payable, short-term borrowings, long-term debt and ownership equity revolves around the mechanism of financial structure (Yasin, 2014). Today, one of the most repeatedly researched areas in finance is corporate financial structure. Thus, financial structure therefore covers all of a company's liabilities in entirety unlike the capital structure which only includes long-term debt and equity.

Further, the finance manager is always concerned with the best financial mix that its cost of procurement is less the return on investment (ROI). The finance manager of the enterprise therefore, weighs the pros and cons of every source available to them while keeping in view the target financial structure of the company (Pandey, 2001). The stringent access to finance especially to the manufacturing firms with rising business risks, daily increase of inflation, high interest rate and unstable policies of the government and other conditions required by fund-suppliers have cumulatively added to the challenges abysmally suffered by the manufacturing firms in Nigeria.

The challenge of the manufacturing firms in Nigeria vis-à-vis financial structure is no doubt evident in the high costs of fund. The stringent listing requirements and high floatation costs in the Nigerian capital market put at 5.4% of the raised funds (Michael, 2012), the deposit money banks (DMBs) on the other hand is even a dead trap for manufacturing companies with a frightening interest rate of 25% on loans with deplorable infrastructures of the economy (Olatundun, 2011).

Basically, these challenging factors reduce the ability of the enterprise to raise finance through equity issues or debt and or combination of both and therefore undertake changes to their financial structure which may not be to the wealth maximization objective. The limited sources of finance (financial structure) and difficulties in accessing them by the manufacturing firms significantly affected the productivity capacity of the manufacturing sector in Nigeria. The compulsory requirement of tangible assets by the fund-providers, especially the deposit money

banks and the continued decline in the profitability trends of manufacturing firms have further constrained capital formation in the sector. The evaluation of the past reputation of a company (the firm's size and its credit worthiness) by the creditors hinders the flow of capital to the manufacturing firms in Nigeria thereby affecting their outputs with negative impact on the Nigerian economy. The essential contributions of the manufacturing firms in Nigeria cannot be over emphasized and problems affecting them have remained enormous (Sangosanya, 2011). Undoubtedly, the access and supply of finance has immensely threatened the corporate existentiality of many companies and firms in Nigeria. It therefore, makes a research sense in the light of the above backdrop to find out what drives corporate financial structure of firms and how firms make choice of capital finance that guarantee maximum return on investment and at the same time minimize weighted average costs of capital.

The broad objective of the study is to ascertain the determinants of the financial structure of listed manufacturing firms in Nigeria, while the study specifically seeks to:

- investigate the effect of firms' asset tangibility on the financial structure of selected manufacturing firms in Nigeria,
- ascertain the effect of firm's profitability on the financial structure of selected manufacturing firms in Nigeria,
- identify the effect of firms' size on the financial structure of selected manufacturing firms in Nigeria.

## **2.0 Synoptic Empirical Review**

The seminal work of Modigliani and Miller (1958) (M and M theory) on capital structure states that what constitutes financial structure or the particular way a firm should go about seeking and or taking decision regarding additional finance has generated a lot of debate in the corporate finance world and yet have not ended due to divergent views on the conventionality of the determinants of corporate financial structure because of country, sector or even economies popular factors. Adding to the debate, Atseye, Edim and Eke (2014) argue that Nigeria's financial markets lack the capacity to address the financial obligations of business firms and they called for concerted ideas in opening up other sources of business finances. The argument was made when they examined the determinants of financial structure for 25 Nigerian quoted firms from 1999-2012. In the same way, Akingunola and Oyetayo (2014) in their study on financial structure decision in small and medium enterprises pilot study of selected registered companies in Nigeria pointed at profitability and size as the major drivers of financial structure of firms under study. Collaborating to the above findings, Babalola (2014) investigated the major cause of financial structure pattern of listed firms in Nigeria. In his view, he maintained that some factors are responsible for the financial structure of corporate firms. According to the findings, he enumerated the following as being culpable for the patterned financial structure of firms: financial distress, bankruptcy threats, solvency problem and unstable economic and changing political environment situations.

Further, Asli, Lue and Vojislav (2006) conducted research on the determinants of financing obstacles across 80 countries and used survey data on a sample of over 10,000 firms. The findings

of the study reveals that institutional development is the most important country characteristic that explains cross-country variation in firm's financing obstacles and further affirmed that firm's size, age and ownership structure as the individual factors determining the financial structure. Ibrahim and Ali (2015) studied the effect of SMEs' cost of capital on their financial performance in Nigeria. The study used sample of five SMEs from the total population of eleven SMEs listed on the Alternative Securities Market during the five year period 2008-2012. The outcome of the finding indicates that tax shield, profit and asset tangibility influence the financing decision of firms.

Thorsten, Asli-Demirguc, LUC and Vojisalov (2006) assessed the determinants of financing obstacles. A survey data of over 10,000 firms were sampled from about 80 countries to find the following: how to successfully classify and distinguish financially constrained and unconstrained firm and finally the determinants of financing obstacles of firms. The finding of the study indicates that older, larger and foreign owned firms report less financing obstacles. The result of this study further supported the significance of size, age and ownership as determinants of financing decisions and recommended the development of an institutional capacity of country to explaining cross-country variation in firms' financing obstacles.

Asli, Demirguc and Harry (2000) in their empirical works on financial structure and Bank profitability, using bank-level data for a large number of industrial and developing countries also put up their own argument. Their investigations centered on the relative importance of bank or market finance by the relative size of stock aggregates, by relative trading or transaction volumes and by indicators of relative efficiency. The finding shows that in developing countries, both the banks and stock market are less developed and the financial system therefore, seems to be more bank-based. That is, the greater the development of a country's banks, the tougher is the competition, the greater is the efficiency and lower are the bank margins and profits. Therefore, the implication is that, the more developed the stock market is, the financial structure shows more significant influence on bank margins and profits.

In another related study, Ezeoha and Okafor (2010) investigated the local corporate ownership and capital structure decisions in Nigeria with the aim of identifying the nature, degree and direction of the effects of certain classes of corporate ownership on capital structure decisions among firms. The study sampled 71 firms and the result revealed that discrimination between foreign owned and indigenous firms is the major determinants of financial leverage in Nigeria. They however, opine that the consistency of empirical results and capital structure theories across countries depend much on the dominant nature of the corporate ownership structure. In the same way, Mackay and Gordon (2005) examine how industry affects firm financial structure. The finding of the study revealed that in addition to standard industry fixed effect, financial structure is also widely influenced by the position of the firm in the industry, the actions of other firms in the same industry, its status as entrant and or leading firms. This study also maintained that technology and risk are factors that jointly determine the financial structure of a firm within an industry and further hold that industry factors affect not only individual firm decision but also the joint distribution of real-side and financial characteristics within industries. The scholars who

made empirical contributions to the debate are Wakeel and Lateef (2015), Qadar, Anjum, Shahid and Sonia (2015), Kpodar and Singh (2011), Akinyomi and Olagunju (2013), Brigham and Michael (2012), Afza and Hussain (2011), Byoun (2007 cited in Lim (2012), Kariuki and Kamau (2014), Uremadu and Efobi (2012), Chandrasekharan (2012), Khrawish and Khraiwesh (2010) among others. Yet, the argument is endless as Michael (2012) in his study, capital structure determinants of quoted firms in Nigeria and lessons for corporate financing decisions used regression analysis and the result revealed that the components of capital mix is positively determined by cost of equity, existence of debt tax shield, covenant conditions in debt agreement, firm dividend policy, competitors capital mix and profitability while it is negative by the cost of debt, parent company influence and fear of financial failure, call for new and financially unsuccessful firms to reduce debt/equity ratios when there exists a likelihood of increased financial distress and high cost of debt and increase it when cost of equity, profitability and benefit from tax shield is high assuring trade-off between costs and net tax advantage of additional leverage and costs associated with increased likelihood of financial distress and reduced marketability of corporate debt that would result from additional leverage on the other hand. In principle, it is recommended that firms should balance the net advantage of incremental leverage against additional costs that it would result.

## **2.1 Theoretical Framework**

This study adopted the trade-off theory. The theory is also known as the theory of the balance between the dead-weight cost of bankruptcy and the tax shield benefits. It is derived from debt related theories as propounded by Kraus and Litzenberger (1973). Trade-off theory therefore, assumes that a firm's capital composition of debt and equity is determined by taxes and costs of financial distress. It emphasized the balance between tax saving arising from debt, decrease in agent cost and bankruptcy and financial distress costs (Mihaela, 2012; Wan, Shahzinda, Nor, Nurul, Shafina and Nurauliani, 2015). The crux of the theory is the ideology that a company chooses how much debt finance and how much equity finance to use by balancing the costs and benefits. Therefore, primarily, trade-off theory deals with two concepts - costs of financial distress and agency costs. The theory further explains the fact that corporations usually are financed partly with debt and partly with equity. Trade-off theory allows the bankruptcy cost to exist. Hence, it states that each sources of finance has its own cost and return since these affect the firm's earning capacity and its business and insolvency risks in general. For a leveraged firm, interest expenses are treated as deductible expense and in this sense, arise in debt level under the circumstances which the firm is not able to take advantage of financing with debt may be cancelled out by the tax shield benefit and that there is a cost of financing with debt (the bankruptcy costs and the financial distress costs of debt). The marginal benefits of further rise in debt drop as debt increases while the marginal cost increases so that a firm at its efficiency value will focus on this trade-off when choosing the ratio of debt or equity to use for financing. This means that firm with more tax advantage will issue more debt to finance business operation and the cost of financial distress and benefit from tax shield are balanced. Therefore, trade-off theory postulates that a firm will have to

raise debt financing up to a certain point when the marginal value of the tax shield benefit of debt is balanced by the increase in the present value of bankruptcy costs, all things being equal (Myers, 2001; Awan and Amin, 2014; Baker, Ruback and Wurgler, 2005).

As noted by Wolfgang and Roger (2003) cited in Atseye, Edim and Eke (2014), trade-off theory suggests that firm's target leverage is driven by three opposing forces of taxes, costs of financial distress (bankruptcy costs) and agency conflicts which give rise to agency cost. This however, explains further why companies don't have 100% debt or equity financing.

Additionally, the trade-off theory maintains that for a firm to reach its optimal financial structure, the firm needs to balance these opposing forces that is, the benefits of debt (tax shields) and the costs of debt (expected bankruptcy). Therefore, determining the percentage ratio of debt and equity in the financial structure of the company forms the basis of the trade-off theorist. Because, theoretically, firm's capital components of debt and equity is an arbitrage of taxes benefit and costs of financial distress. A firm experiences financial distress when the firm is not fit to cope with debt holder's obligations. The first element of trade-off theory, considered as the cost of debt is usually the financial distress costs or bankruptcy costs of debt. On the other hand, trade-off theory of capital structure can also include the agency costs arising from agency conflicts between managers to shareholders and that of debt holders and shareholders (Ezeoha and Ogamba, 2010).

To the trade-off theorist, because of the steady conflict of interest between debt providers and shareholders, lenders usually demand security and collateral value as a measure to limit their adverse selection and moral hazard. This consequently influences the level of debt finance available to companies (Stiglitz and Weiss, 1981; Williamson, 1988 cited in Aremu, Ekpo, Mustapha and Adedoyin, 2013). The trade-off theory therefore, argued that the degree to which firms' assets are tangible should result in the firm having a greater access to capital funds. Capital intensive companies will relatively employ more debt by pledging the assets as collateral so that fixed charge is directly placed to particular tangible assets of the firm. The position of this theory is further supported by the study of Baharuddin, Khamis, Mahmood and Dollah (2011), Osuji and Oditia (2012) and Salawu (2007).

Essentially, the justification for the adoption of this theory centers on its explanation on the relationship between the specific objectives (tangibility, profitability and size of the firms) of this study and the dependent variable (financial structure) to the listed selected manufacturing firms in Nigeria. This theory further explains the relevance and the influence of the specific objectives of this study in the firm's financial structure decision.

Practically, every right thinking investor will pay much emphasis on the possible ways through which his or her invested capital in a company could be paid back as at when due, hence the need for a collateral value (tangible assets) and the trends of profit making (profitability) which assures any investor that the company will not go insolvent or bankrupt before recouping their investments. Therefore, higher profitability indicates higher debt level and less risk to the debt holders. Thus, profitability and financial structure are positively related (Uremadu and Efobi, 2012; Strike, 2014).

The theory also upholds the relevance and significance of size of a firm on the financial structure decision. It is assumed that smaller firms may find it relatively more costly to resolve

information asymmetries with lenders and other financiers which may discourage the use of outsiders finance and stand to suffer from liquidation as a result of any little financial distress, unlike the larger firm (size) which enjoys economies of scale in bankruptcy costs (Chandra, 2011; Akingunola and Oyetayo, 2014 and Ishaya, Sannomo and Abu, 2013). The concept behind the trade-off theory which is to minimize the cost of capital by employing an appropriate debt and equity financing like every other theory and proposition has its own limitations. Majorly among them is that, trade-off theory has failed to recognize the impact of capital market signals thereby putting both the investors and managers of these corporations off the alternative opportunities offered by the market through its signals indices. Another limitation of trade-off theory is that it has no explanation on proprietary data and in many cases, cannot be practical or justifiable in a real world (Thomas, 2002).

### **3.0 Methodology**

This study is anchored on causal comparative research design. This research design is often employed when a research endeavor is intended to find out the cause-effect relationship between the exogenous and endogenous variables with the purpose of arriving at the causal link between them (Onwumere, Onudugo and Imo, 2013). The justification for the choice of this design is on the ground that the researchers are investigating events that have already taken place and the researchers do not intend to control any of the variables. Therefore, the variables under our investigation are grouped into two in line with the objectives and the chosen estimation model: the dependent (financial structure) and sets of independent variables (assets tangibility, profitability and size). The regression analyses were used while the pooled ordinary least square (POLS) techniques were also used to estimate the parameters of the model specified by this study.

### **3.1 Data and Sources**

The data used for this research were secondary data. The data are time series in nature. All the data were obtained from the Nigeria Stock Exchange (NSE) statistical bulletin/fact-book, the audited annual financial statements of the firms under study and the Federal Office of Statistics (FOS), Nigeria for the period 2005 - 2016. The audited financial report of the firms selected for this study comprised two major sources of information: qualitative and quantitative information. Our study made use of both for the purpose of data generation and analysis in the study.

In the selection, the researchers used purposive sampling method to purposely select all the eight manufacturing firms listed in Nigeria Stock Exchange for the period of 2005 - 2016. The companies include: Nigeria Wire and Cable Plc., Berger Paint Plc., Dangote Cement Plc., Dangote Sugar Refinery Plc., Cadbury Nigeria Plc., Nestle Nigeria Plc., PZ Cussons Nigeria Plc. and Unilever Nigeria Plc. The basis for choosing these firms and the period is the availability of data. Again, this period were characterized with financial crisis in the financial sector as well as the Nigeria capital market and this study seeks to determine the cause-effect of the variables on the financial structures of the listed firms in Nigeria.

### 3.2 Description of Research Variables and Empirical Model Specification

To ascertain the determinants of financial structure of listed manufacturing firms in Nigeria, the study adopted the following independent variables namely - tangibility, profitability, taxation and size while financial structure remains the endogenous variable. These variables are technically described as follows:

*Financial structure:* This is the total liabilities in a firm financing. It is measured as the ratio of total liabilities to total asset.

*Tangibility:* Tangibility of assets is also known as asset structure. In this study, it is defined as the ratio of company's fixed asset to total assets (Babalola, 2014). This definition of tangibility makes it the book value of plants and equipment over total net. According to Atseye, Edim and Eke (2014), it is expressed as

$$\frac{\text{Fixed assets}}{\text{Total assets}}$$

*Profitability:* This is defined in this study as the ratio of earnings before interest and taxes (EBIT) to total assets of a firm (Aremu, Ekpo, Mustapha and Adedoyin, 2013). Profitability, according to Babalola (2014), is the earnings before interest and tax dividend. Technically, it is measured as EBIT/Capital employed (Aremu, Ekpo, Mustapha and Adedoyin, 2013).

*Size:* The size of the firm is measured as the natural log of total assets of a firm (Chandrasekaran (2012).

*Taxation:* It is defined as the effective tax rate. This is the amount paid as tax (Babalola, 2014).

From the light of the above, the researchers however introduced taxation as controlled variables in the model specification to avoid biased findings from the OLS estimation. The research model is specified thus:

$$\text{Finst}_t = \beta_0 + \beta_1 \text{Tang}_{ti} + \beta_2 \text{Prof}_{ti} + \beta_3 \text{Tax}_{ti} + \beta_4 \text{Size}_{ti} + \epsilon_{ti} \dots(1)$$

Where:

$\text{Finst}_t$  = is the dependent variable (Financial structure), measured as defined above.

Tang = Represent Tangibility

Prof= Represent Profitability

Tax = Represent Taxation

Size= Represent size of firm.

t = Represent time periods of the observation i.e. 2005-2014 (annual value)

i = Represent each observation at the point in time.

$\beta_0$  to  $\beta_4$  Represent beta coefficient.

$\epsilon$  = Error or disturbsance term

The model is further restructured to transform the absolute figures in the data using logarithm parameters as follows:

$$\text{LogFinst}_t = \beta_0 + \beta_1 \text{Tang}_{ti} + \beta_2 \log\text{Prof}_{ti} + \beta_3 \log\text{Tax}_{ti} + \beta_4 \text{Size}_{ti} + \epsilon_{ti} \dots(2)$$

Log Represent logarithm



#### 4.0 Empirical Result

Some diagnostics analyses were performed to ascertain the justification of the use of panel data analysis in the study. Thus, pooled estimate of the model was conducted to examine its acceptance or rejection for the analysis of the panel data model. The result is presented in table 1.

**Table 1: Results One [Finst (Dependent Var.)] (Pooled OLS)**

Series	Coefficients	Std. Err.	t-values [P-values]
Tang	-5.2412	6.6512	-0.79 [0.433]
Prof	-4.7512	2.6211	-0.18 [0.857]
Size	5.4312	5.1912	1.05 [0.299]
Constant	1.196792	0.14834	8.07 [0.000]**
R-Squared	0.0186	0.387689	0.649243
F-Stat =	0.48	P- Value =	[0.6968]

**Sources:** Researcher's compilation from STATA (version 13.0)

In table 1, the model assumed that the intercept values of the eight (8) companies are the same. It also assumed that the slope coefficients of Tang, Prof and Size which are -5.2412, -4.7512 and 5.4312 are all identical for all the eight companies. Obviously, these are very unrealistic assumptions. Therefore, the pooled regression model is impractical and not capable of giving the true picture of the relationship between financial structure (Finst) and the regressors [tangibility of assets (Tang), profitability of companies (Prof) and size of the companies (Size)] across the eight firms. This overly restrictive nature of the model led to error process that is heteroscedastic across panel units, serial correlation within panel units etc. For instance, a test to check for constant variance in the error across the eight (8) companies in the form of descriptive test is further performed. The result is presented in table 2.

**Table 2: Descriptive Analysis of the Variables across Companies**

<b>Company</b>	<b>FS</b>	<b>TANG</b>	<b>PROF</b>	<b>SIZE</b>
Nestle	1.011344	3.6110	1.3410	4.4010
Cadbury	0.784076	1.2810	3.3009	3.1010
PZ Cussons	0.890747	1.9110	4.6309	4.8410
Unilever	2.964363	9.9609	3.8209	2.4410
Nig. Wire & Cable	0.964530	3.0008	4732311	2.1608
Berger Paint	1.439007	9.0808	2.0308	1.7809
Dangote Sugar	1.221762	1.0910	1.2410	6.1010
Dangote Cement	0.858966	1.9811	6.0210	2.5511

**Sources:** Researcher's compilation from E-view (version 9.0)

Table 2 reports the company-specific parameters' mean (Finst, Tang, Prof and Size). There is pronounced cross company variation. In consideration of Finst, Unilever Nigeria PLC assumes the highest mean score with 2.94363 while Dangote Cement PLC has the lowest mean score of 0.858966. With respect to Tang, Unilever Nigeria PLC assumes the highest mean score with 9.9609 while Berger Paint PLC obtained the lowest mean score of 9.0808. In Prof, the parameter ranges from 4732311 as mean score in Nigeria Wire & Cable PLC to 1.2410 in Dangote Sugar PLC. The cross-sectional variation is observed for Size which indicated that the maximum value of mean score is 6.1010 as obtained from Dangote Sugar PLC while the minimum mean score was 1.7809 as gotten from Berger Paint PLC.

**Table 3: Levene’s Robust test Statistic**

Summary of Residuals			
COMPANY	Mean	Std. Dev.	Freq.
1	-.17155113	.23462064	10
2	-.50335969	.49927106	10
3	-.44689116	.67721543	10
4	1.7055982	1.6414473	10
5	-.23184408	1.0293987	10
6	.2382744	.83719228	10
7	-.19056733	.89705305	10
8	-.39965923	.75832481	10
Total	1.402e-16	1.1044209	80

W0 = 4.3782681    df(7, 72)    Pr> F = 0.00042971

W50 = 2.4968195    df(7, 72)    Pr> F = 0.02356206

W10 = 3.4635317    df(7, 72)    Pr> F = 0.00297991

**Source:** Researchers’ Compilation from STATA

In table 4, the hypothesis of equality of variances is obviously rejected by all the three robvar test statistics. As seen from the table 4, W0 is Levene’s robust test statistics used to test for the equality of variances between groups. Its statistic is 4.38 approximately while its associated P-value is 0.00043. The chosen level of significance  $\alpha = 0.05$  is greater than the P-value = 0.00043. Therefore, there is no equality of variance. W50- is the first alternative statistics proposed by Brown and Forsythe that replaces the mean in Levene’s formula with the median. This test equally showed that there is no equality of variance as chosen level of significance  $\alpha = 0.05$  is greater than the P-value = 0.0236. More so, W10 is the second alternative statistic that replaces the mean with 10% trimmed mean. It indicated that there is no equality of variance as chosen level of significance  $\alpha = 0.05$  is greater than the P-value = 0.00298. In the light of these observations, it is now obvious that

a model that can take into account the specific nature of the eight (8) companies is needed for analysis.

**Table 4: Panel Data Test of Heterogeneity**

FS	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Company						
1	.9830334	.2954605	3.33	0.001	.3936058	1.572461
2	.5776991	.3009073	1.92	0.059	-.0225945	1.177993
3	.5681522	.3213598	1.77	0.081	-.0729431	1.209247
4	2.838104	.2913329	9.74	0.000	2.256911	3.419297
5	.9632325	.2866603	3.36	0.001	.3913608	1.535104
6	1.42843	.286696	4.98	0.000	.8564872	2.000373
7	.9385926	.3493766	2.69	0.009	.2416053	1.63558
8	.2484066	.4230082	0.59	0.559	-.5954717	1.092285
Tang	-2.4612	6.4712	-0.38	0.705	-1.5411	1.0411
Prof	-2.3811	2.4511	-0.97	0.334	-7.2611	2.5011
Size	9.9212	4.7512	2.09	0.040	4.5213	1.9411

**Source:** Researchers' compilation from STATA

Table 4 is compared with table 3 of pooled regression. In the least squares dummy variable (LSDV), the estimated coefficients for all the companies are statistically significant at 5% level of significance except company 2, 3 and 8. To test whether all the intercepts are equal, in which case there is no company heterogeneity; the test below is considered.

**Table 5. Test on Equality of Parameters' Intercept**

( 1)	1bn.Company = 0
( 2)	2.Company = 0
( 3)	3.Company = 0
( 4)	4.Company = 0
( 5)	5.Company = 0
( 6)	6.Company = 0
( 7)	7.Company = 0
( 8)	8.Company = 0
	F( 8, 69) = 18.59, Prob> F = 0.0000

**Source:** Researchers' compilation from STATA

Observing from table 5, we reject the null hypothesis that the parameters for all the companies are equal. We conclude that there are differences in company intercepts, and that the data should not be pooled into a single model with a common intercept parameter.

**Table 6: Baseline Results [FS (Dependent Var.)]**

Series	FEOLS (A1)	RandomE.OLS (A2)
C	1.0682 [0.000]**	1.0888 [0.001]**
Tang	-2.4612 [0.705]	-2.0611 [0.622]
Prof	-2.3811 [0.334]	-2.0612 [0.386]
Size	9.9212 [0.040]**	9.2712 [0.045]**
Rho	0.4368	0.4771
F u <sub>i</sub> =0	6.90 [0.0000]**	
Observations	80	80
R-Squared	0.0867	0.0862
Hausman Test	Value =	[0.8128]

**Sources:** Researcher’s compilation from STATA

In table 6, we considered the fixed effect OLS result and random effect OLS result in order to allow for heterogeneity or individuality among the companies by allowing for own intercept value. Thus, fixed effect model (FEM) and random effect model (REM) adopted due to the fact that although the intercept may differ across companies, but intercept does not vary over time, that is, it is time invariant. However, only the parameter; Size is found to significantly influence Finst within 5 percent level as confirmed by its P-value [0.040]. This implies that the estimated parameters of Tang and Prof do not significantly influence the financial structure of manufacturing firms in Nigeria as indicated by their respective P-values such as [0.705] and [0.334]. The rho is the fraction of variance due to  $U_i$  and fitted values. The result shows that 43.7% of the variance is due to differences among the eight (8) companies. More so, F-test that all  $U_i = 0$  shows null hypothesis that there is no significant difference between the individual intercepts. The result shows that there are significant individual company effects.

In column A2 (Random Effect Model) of table 6, only one parameter too- firms’ size (Size) is found to significantly influence financial structure (Finst) as indicated by its P-value [0.045]. This implies that the estimated parameters of firms’ tangibility (Tang) and firms’ profitability (Prof) do not also have any significant influence on financial structure of manufacturing firms in Nigeria as shown by their respective P-values such as [0.622] and [0.386].

Additionally, we apply Hausman test to check which model (Fixed effect or random effect) is suitable to accept for estimation. Thus, in the overall analysis, it is established that it is only size

among the variables of the study that is the only significant parameter in measuring financial structures of the selected listed manufacturing firms in Nigeria. Therefore, in line with our structured hypothesis, there is no significant effect of firms' tangibility and profitability on the financial structure of listed manufacturing companies in Nigeria.

#### **4.1 Discussion of Findings**

Essentially, from our findings, it is established that assets tangibility otherwise known as asset structure has no significant effect on the financial structure as indicated by the chosen level of significance and the probability value ( $0.05 > 0.622$ ). This is as against the apriori expectation because, it was anticipated that being a strong hold financial structure factor, it would be a prime driver of financial structure in Nigerian manufacturing companies. Therefore, increase in the tangible assets of sampled selected listed manufacturing companies has no corresponding increase in the financial structure for the period of the investigation. The result further disagreed with the position of the trade-off theory adopted by the study. However, there are sets of empirical studies in support of our new findings. See for instance: Kariuki and Kamau (2014), Serghiescu and Vaidean (2014), Ogbulu and Emeni (2012), Booth, Aivazian, Demircuc-Kant, Maksimovic (2001), Serghiescu and Vaidean (2014).

Again, profitability, though has no significant value as shown by the chosen level of significance and the probability value ( $0.05 > 0.386$ ), it also contradicts the apriori expectation of the study which hold that firms' with increased profit, all things being equal, will experience a corresponding increase in the financial structure. But this does not hold in the Nigeria case. Recent studies by Michael and Adefemi (2015), Qadar, Anjum, Shahid and Sonia (2015), Akingunola and Oyetayo (2014) and Serghiescu and Vaidean (2014) have strong support to the current finding that profitability is not a determinant factor in corporate financial structure. So our finding is not alone in the pragmatic text.

On the other hand, as stated earlier, company size (proxy by total assets) is indicated as a determinant of company financial structure in Nigeria. This present result also supports the assumption of the trade-off theory that larger firms (size) enjoy economies of scales in bankruptcy costs and financial distress costs etc. unlike small firms which have lower leverage ratio and may be liquidated when they suffer any little financial distress, all things being equal. Empirical studies in support of this views are Ezeoha (2006), Akingunola and Oyetayo (2014), Uremadu (2009), Kariuki and Kamau (2014), Akinyomi and Olagunju (2013), Michael and Adefemi (2015) and Isola (2012).

#### **5.0 Conclusion**

In conclusion, bearing in mind that this study set out to ascertain the determinants of the financial structure of selected and listed manufacturing firms in Nigeria, the study concludes that size of the listed firms significantly influence their financial structure in Nigeria. Again, both asset tangibility and profitability have no significant effect on the financial structure of all the companies investigated for the period of our study in Nigeria. The study also concluded that the cost of

floating shares in Nigeria Stock Exchange is high and identified weakness and bureaucracies in the listing processes. Thus, failure of the government to address the critical infrastructure needs of the manufacturing sector has led to the current level of economic deterioration and over dependence on importation, unemployment and rising inflation being experienced in the Nigeria emerging economy. The study further concludes that there are other controlled variables of the financial structure such as growth rate, tax shield, age and earning volatility that may perhaps influence financial structure in Nigeria, though there is inadequate research culture in the manufacturing sector in Nigeria.

## **6.0 Recommendations**

From the analysis, findings and the conclusion, the following recommendations are put forward in order to strengthen the manufacturing sector in Nigeria:

- ✓ The costs of floating shares in the Nigeria Stock Exchange should be reviewed downward and the institution made more effective for better efficiency so they could live up to their expectation. In this way, manufacturing companies will not have to collapse for lack of fund and or difficulties in meeting up with the stringent listing conditions attached to floating shares and other fund providers especially the Deposit Money Banks (DMBs) who are not always interested to extending credit facilities for fear of high risk and other peculiarities therein.
- ✓ Owing to the peculiarities in the manufacturing sector, the study recommended that a special bank be established to cater for the financial needs of the sector considering its immense benefits to the economy.
- ✓ The fiscal policy makers and other financial regulatory authorities should develop and articulate plans on how to inject fund to sectors highly considered critical to the development of the economy. Financial intermediaries like Deposit Money Banks (DMBs) and Bank of Industry (BOI) could be directed to invest certain percentages in the manufacturing sector considering its contribution to the growth of the economy.

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