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CAPITAL STRUCTURE AND PROFITABILITY OF SELECTED AGRICULTURE AND AGRO-ALLIED FIRMS ON NIGERIAN STOCK EXCHANGE: POST INTERNATIONAL FINANCIAL REPORTING STANDARD ANALYSIS

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ABSTRACT

This current study investigates the relationship between the capital structure of firms and their profitability using data on 18 selected agriculture and agro-allied firms which are listed on the Nigerian Stock Exchange. The study is based on the post adoption of International Financial Reporting Standard and spans 2007 through 2012. Using the Ordinary Least Square analytical technique and garnering secondary data from firms' annual reports, the empirical results show that profitability is positively and significantly related to shareholder equity but negatively and significantly related to long-term debt. The findings here lend credence to the need for agriculture and agro-allied firms to prioritise internal sources of revenue.

Key words: Capital Structure, Profitability, Shareholder Equity, Long-term Debt; Ordinary Least Square

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1. INTRODUCTION

Most businesses naturally set out to achieve three major objectives. These objectives include the minimization of cost of capital, profit and firm-value maximization. Managers are saddled with the responsibility of taking appropriate finance decision that would give appropriate mix of debt and equity that will constitute the capital structure of a firm [10, 26]. There are two sources that a firm can generate fund from and these are external and internal sources of finances. Funds such as retained earnings from previous year's operations of the firm are internal source of finance available for financing the assets of the firm. This may be in the form of the equity of shareholders. Inversely, funds such as debt and new equity are external source of finance available for financing the assets of the firm. According to [26] "the capital structure does affect firm's cost of capital and consequently profitability."

Debate on optimal capital structure on minimizing cost of capital, profit maximization and maximization of firm value has been the main focus of the finance experts and researchers for many years [17, 29, 22]. Nevertheless, there has been no consensus as to how capital structure influences the profitability of firms. This leaves the topic opens for further research. Also, most extant researches that examined the relationship between capital structure and profitability in the developing country like Nigeria have conducted their studies before IFRS. Examples include [29, 24, 2, 13, 6, 4]. These studies have established that there is significant relationship between capital structure and profitability of firms before adoption of IFRS. The important question being posed by this current study is "does the relationship remain same after adoption of IFRS in Nigeria?" There is dearth of literature on studies that examine the relationship between capital structure and profitability of firms listed on NSE after the adoption of IFRS. This investigation is pertinent especially now that firms listed on NSE have been mandated to adopt the use of IFRS since 2012.

This study offered to fill this gap in the literature. Hence this study examined the relationship between capital structure and profitability after the adoption of IFRS in Nigeria. In line with [1], long-term debt (hereafter referred as LTDEBT) and shareholder's equity (hereafter referred as SHEQUITY) are used as proxies for capital structure, while profit before interest and tax (hereafter referred as PBIT) was used as proxy for profitability using selected quoted Agriculture and Agro-allied firms on the NSE. Given the pivotal role played by the agricultural sector in Nigeria as it contributes consistently about 75 percent to the non-oil exports [36, 37] and employs over 40 percent of the population, the Nigerian government has prioritised this sector. To this end, and sequel to the availability of data, the agriculture and agro-allied sectors are chosen for this research.

The working hypothesis of this current study are: (1) the shareholders equity does not significantly impact the profit before interest and tax of the selected firms and (2) long-term debt does not significantly impact profit before interest and tax of the selected firms.

2. LITERATURE REVIEW

2.1. Conceptual Framework

The dependent variable is profitability proxied by PBIT. Profit before Interest and Tax (PBIT) is the profit generated by the combined capital mix of a firm and these include shareholder equity (SHEQUITY) and Long-term Debt (LTDEBT). This variable was adopted in line with [1]. Another study in line with this study is [34]. However [1] and [34] were conducted before the adoption of IFRS. The independent variables in this study consist of SHEQUITY and LTDEBT. Shareholder equity (SHEQUITY) is the internal source of funding the firm business operation. Shareholder equity (SHEQUITY) consist of firms' share capital and accumulated reserve or loss attributable to owners of the firm while Long-term Debt

(LTDEBT) which is external sources of funding the firm business operations is the portion of the capital mix belonging to outsiders. These variables were adopted in line with [1]. Another study in line with this study is [34]. However [1] and [34] were conducted before the adoption of IFRS. The only control variable adopted in this study is current share price of firms. It was adopted based on the fact that the previous study of [25] shows that share price and profitability are positively and significantly related. Another study in line with [25] is the study of [31]. These entire concepts were adopted in this study.

2.2. Theoretical Framework

Capital structure theory started with [20] irrelevant theory which presumed that value of firms is not affected by the capital mix of debt and equity. Modigliani and Miller are popularly called MM theory. After some years modified irrelevant theory was introduced by [21]. [21] presumed that value of firms is affected by the capital mix of debt and equity where taxation and capital cost exist. [21] assert that debt would be beneficial to firm where there is tax shield which would lead to reduction in cost of capital by deducting tax from interest [19]. In this case the cost of capital is reduced by tax shield which resulted from deduction of tax from interest. According to [26:3789] MM "assert that returns made from using only equity would be lesser than returns a firm would generate from the mixed capital after the optimal capital structure is reached and from this point, a firm would be able to maximize returns to its Shareholders. They went further to encourage firms to use only debt capital to finance their operation because of the tax deductions on interest payment." [8] faulted MM on practical point of view but opined that MM is theoretically alright. [8] opined that cost of bankruptcy have proportional and direct relationship with the level of debt of a firm. The capital structure would be at optimal level only when cost of bankruptcy is equal to tax sheltering benefits obtained from an increase in the debt level of the firm. Other considered in this study include trade off theory, static trade off theory, dynamic trade off theory and pecking order theory.

Trade off theory added to MM theory and take further risk acquiring debt into consideration. According to [27:7] "The tradeoff theory says that there is a maximum level of debt where an additional increase is equal to the extra cost of the financial suffering. The calculation of the extra cost of the financial suffering is the hardest job such that one can determine the optimal debt level. Therefore, the theory argues that firms should find out the optimum level of the debt and equity financing [5]. The obvious candidate is bankruptcy. [15] provide a classic statement of the theory that optimal leverage reflects a trade-off between the tax benefits of debt and the deadweight costs of bankruptcy. According to [16], a firm that follows the trade-off theory sets a target debt-to-value ratio and then gradually moves towards the target. The target is determined by balancing debt tax shields against costs of bankruptcy." Under trade off theory, there is static trade off theory and dynamic trade of theory. Static trade off presume that every firm has an optimal debt to equity ratio that maximizes its value. The static trade-off theorist, posit that a firm sets its target debt level and then works towards it. The theory refers to the idea that a company chooses how much debt finance and how much equity finance to use by balancing the costs and benefits [11]. [32] took the severe step of assuming away uncertainty. The first dynamic models to consider the tax savings versus bankruptcy cost trade-off are [14] and [7]. Their model took into consideration: taxes, uncertainty and bankruptcy costs but no transaction cost. The firms maintain high debt level and take advantage of tax savings as there is no transaction cost.

The Pecking order theory assumes that there are three sources of financing which are internally generated source of finance such as using retained earnings from previous year's operations of the firm to finance the assets of the firm, debt issue and equity issue. Both debt issue and equity issue are called external source of finance. The pecking order theory opined

that firm should finance their assets and operations firstly from their internally generated cash, then on debt issue and lastly on the equity issue. They opined that cost of debt will have negative impact on the level of profitability of the firm and issuance of new equity will dilute the ownership structure of the firm and reduce the percentage of profit due to existing shareholders on the long run. Hence the most preferred source of finance to minimize cost of capital, maximize profit and maximize of firm value is internal source [16, 18, 27]. Consequently, it is expected that debt and profitability are negatively related while shareholder equity and profitability are positively related. This current study adopts the pecking order theory as its theoretical thrust in order to examine the relationship between capital structure and profitability of firms in the IFRS era using selected quoted Agriculture and Agro-allied firm on NSE. In essence, the working hypothesis as stated in the background to the study may be considered to be akin to investigating the applicability of the pecking order theory to the selected firms in Nigeria.

2.3. Empirical Evidences

The results of extant studies exploring the relationship between profitability and capital structure are mixed. Some extant studies found positive relationship [3, 2, 28, 12, 23, 1] while some other extant studies found negative relationship between capital structure and profitability [30, 33, 9, 30]. [3] used total debt to equity, short – term, long term debt to total assets and debt to total assets as proxies for capital structure. It also used profit margin and return on asset as proxies for profitability and found that profit margin as well as return on asset are positively and significantly related. The study used the ordinary least square technique on 45 manufacturing firms listed on the Amman Stock Exchange spanning 2005 through 2009. [28] used total debt to capital ratio, short – term debt to capital ratio and long – term debt to capital ratio as proxies for capital structure and also used earnings per shares, return on asset and return on equity as proxies for firm performance. Using a multiple regression analysis on data from 2007 to 2011, the study found that capital structure and firm performance of the banking industry in Pakistan are positively and significantly related.

[12] used South African listed firms, Germany and Sweden listed firms as well as China for period of 2003- 2012 and concluded that in Germany and Sweden, there is a relationship between performance of firms and capital structure and it is positive and significant. In China, [12] found a negative and significant relationship between performance of firms and capital structure. [33] used return on equity, return on capital employed and net profit ratio as measure of financial performance. [33] used listed firms between 2007 and 2011 on Colombo stock exchange. The results show that performance of firm and capital structure are negatively related. [9] used firms listed on the Shanghai and Shenzhen stock exchange and concluded that profitability and capital structure are negatively correlated. [30] used Return on assets, Return on equity, Earning per share and Tobin Q as measure of performance of firms while total debt, long term debt and short term debt are used as proxies for capital structure. [30] concluded that capital structure had negative and significant impact on Return on equity. [23] used Return on capital employed net profit margin (NPM) and gross profit margin (GPM) as proxies for profitability while long-term debt, debt asset ratio and debt-equity ratio were used as proxies for capital structure. Employing the ordinary least square technique and data on firms listed on the Sri Lanka stock exchange, [23] concluded that profitability and capital structure are significantly related. [1] used share equity and debt as proxies for capital structure while profit before interest and tax was used as proxy for profitability to examine the relationship between profitability and capital structure for the period of 2005 to 2012. [1] indicate that capital structure and profitability are positively and significantly related. Ten banks listed on NSE was used for the study. The foregoing provide insight on the common

analytical techniques and variables and sets the tone for the analytical aspect of this current study.

3. METHODOLOGY

In examining the relationship between capital mix and firms' profitability using selected Agriculture and Agro-allied firms listed on the NSE from period of five (5) year (2012 to2016), this research adopted the ordinary least square regression technique.

3.1. Population of the Study, Sample Size and Sampling Technique

The population of this study includes twenty-three (23) Agriculture and Agro-allied firms quoted on the NSE from 2012 to 2016 and the sample size consist of eighteen (18) Agriculture and Agro-allied firms quoted on the NSE for the study period as tabulated below:

Table 1 Number of population and the sample size

SN	Description	Total Number	Sample size
1	Quoted agriculture and agro-allied firms	23	18 (78.26%)

Source: the authors

The sample size is selected in line with the modern online sample size calculator by Raosoft Inc which required that at least 50% of the population of the study must be selected [35]. This study selected 78.26% of the quoted Agriculture and Agro-allied firms using the simple random sampling technique.

3.2. Operationalisation of Research Variables

Dependent Variables (Profitability proxied by PBIT)

The dependent variable is profitability proxied by PBIT. PBIT is the profit generated by the combined capital mix of a firm and these include shareholder equity (SHEQUITY) and Long-term Debt (LTDEBT). This variable was adopted in line with [1]. Another study in line with this study is [34]. However [1] and [34] were conducted before the adoption of IFRS.

Independent Variables (Capital Mix proxied by SHEQUITY & LTDEBT)

The independent variables in this study consist of SHEQUITY and LTDEBT. Shareholder equity (SHEQUITY) is the internal source of funding the firm business operation. Shareholder equity (SHEQUITY) consist of firms' share capital and accumulated reserve or loss attributable to owners of the firm while Long-term Debt (LTDEBT) which is external sources of funding the firm business operations is the portion of the capital mix belonging to outsider. These variables were adopted in line with [1]. Another study in line with this study is [34]. However [1] and [34] were conducted before the adoption of IFRS.

Control variable

The current share price of firms is used as a control variable because it also affects the profit before interest and tax. It was adopted based on the fact that the previous study of [25] shows that share price and profitability are positively and significantly related. Another study in line with [25] is the study of [31]. These variables are tabulated below:

Table 2 Dependent and the Independent variables

A	Independent variables	
	CAPITALMIX	
1	SHEQUITY	Shareholder equity
2	LTDEBT	Long-term Debt
B	Dependent variables	
	PROFITABILITY	
3	PBIT	Profit before Interest and Tax
C	Control variable	
4	SP	Share Price

Source: the authors

Model Specification

The profit before interest and tax is expressed as a function of the share equity, long-term debt and share price. This can be mathematically expressed as:

$$PBIT_{it} = f(SHEQUITY_{it}, LTDEBT_{it}, SP_{it}) \quad 1$$

Equation 1 can be expressed explicitly as

$$PBIT_{it} = \alpha_0 + \alpha_1 SHEQUITY_{it} + \alpha_2 LTDEBT_{it} + \alpha_3 SP_{it} + e_{it} \quad 2$$

Where:

PBIT is Profit Before Interest and Tax (Dependent variable); *SHEQUITY* is share equity; *LTDEBT* is long-term debt and *SP* is a control variable introduced into the model to control for the prices of shares. The subscripts i and t stand respectively for a particular quoted firm i at time t. e in equation 2 is the error term which is meant to account for other variables that affect the dependent variable but not included in the model.

α_i are regression coefficients/parameters, with i = 0,1,2,3.

The *a priori* expectation is given as:

$\alpha_1, \alpha_3 > 0$. This means that increases in any of the shareholder equity and share price is/are expected to lead to increases in the profit before interest and tax .Contrarily, $\alpha_2 < 0$, that is, increases in long-term debt is expected to lead to decline in the profit before interest and tax.

4. ANALYSIS AND DISCUSSION

4.1. Descriptive Statistics

The descriptive statistics for the variables is given below

Table 3 Descriptive Statistics of Variables

	PBIT	SHEQUITY	LTDEBT	SP
Mean	13150126	40710969	14009179	83.46956
Median	4243829.	16687320	6067812.	17.03000
Maximum	1.72E+08	3.02E+08	73351269	1200.000
Minimum	-9922726.	-4608386.	41146.00	0.500000
Std. Dev.	24553476	60338780	17325064	213.4083
Skewness	3.731146	2.347956	1.526974	3.792076
Kurtosis	21.64620	8.422549	4.563213	16.90890

Jarque-Bera	1512.624	192.9586	44.13838	941.1629
Probability	0.000000	0.000000	0.000000	0.000000
Sum	1.18E+09	3.66E+09	1.26E+09	7512.260
Sum Sq. Dev.	5.37E+16	3.24E+17	2.67E+16	4053336.
Observations	90	90	90	90

Source: Authors' computation using E-Views 9.0

Table 3 shows that the probability of the Jarque-Bera statistics' of profit before interest and tax (PBIT), shareholder equity (SHEQUITY), long-term debt (LTDEBT), share price (SP) which are 0.000000, 0.00000, 0.00000 and 0.000000 respectively. This implies that the variables are not normally distributed. Pooling data for 18 quoted firms over a five-year period gives a robust total number of observations of90

4.2 Regression Analysis

The regression analysis was used to study whether profitability and capital structure of firms are significantly related from 2012 to 2016.

Table 4 Regression Results

Variable	Coefficient	Standard Error	T-Statistic	Probability
Constant	-1716251	1658439	-1.0349	0.3036
SHEQUITY	0.3987	0.0334	11.9409	0.0000
LTDEBT	-0.2806	0.1217	-2.3055	0.0235
SP	30726.14	6542.36	4.6965	0.0000
F-Stat: 94.974; F (prob.):				
Total observations: 90; R-squared: 0.768; Adjusted R-squared: 0.760				

Source: Author's computation using E-view.

Predictors: (CONSTANT) LTDEBT, SHEQUITY, SP

Dependent Variable: PBIT

Interpretation

For simplicity, the p-values are used to interpret the significance of each of the independent variables. The results as displayed in Table 4 above indicates capital structure proxied by shareholder equity (SHEQUITY) as well as Long-term Debt (LTDEBT) and firms profitability proxied by Profit before Interest and Tax (PBIT) are significantly related. Shareholder equity (SHEQUITY) and Profit before Interest and Tax (PBIT) are positively and significantly related where the regression coefficient of the shareholder equity (SHEQUITY), is positive (0.398724) with a p-value of 0.0000 which makes the coefficient value significant at 1%. This is in line with the *a priori* expectation that the higher the Shareholder equity (SHEQUITY), the higher the Profit before Interest and Tax (PBIT). The significance of this variable indicates that shareholders' equity is an important contributor to the profit before interest and tax.

Long-term Debt (LTDEBT) and Profit before Interest and Tax (PBIT) are negatively and significantly related where the regression coefficient of the Long-term Debt (LTDEBT), is negative (-0.280586) with a p-value of 0.0235 which makes this variable to be significant at 5%. This is in line with the *a priori* expectation. The import of this is that higher long-term

debts do not bode well for the profitability of firms. More explicitly, it means that higher long-term debts significantly depress firms' profitability.

Share Price (SP) and Profit before Interest and Tax (PBIT) are positively and significantly related where the regression coefficient of the Share Price (SP), is positive (230726.14) with a p-value of 0.0000 which makes this variable to be significant at 1%.

The F-value which is significant at 1% level indicate that the overall model is significant. The value of the coefficient of determination (r-squared) shows that about 76.81% of the changes in the dependent variable -Profit before Interest and Tax (PBIT) is explained by the independent variablecan be explained for 76.81%. This shows that the model has a good fit. The adjusted r-squared (Adj R-squared = 76.00%) also lends credence to this conclusion.

4.3. Hypotheses Testing

Recall Hypothesis One**:** There is no significant relationship between PBIT and SHEQUITY.

The result of the regression analysis shows that Shareholder equity (SHEQUITY) and Profit before Interest and Tax (PBIT) are positively and significantly related. Based on the regression analysis results, the null hypothesis is hereby rejected and the alternative hypothesis which states that there is a significant relationship between PBIT and SHEQUITY is accepted. The significant relationship is positive. This result is in line with this study *a priori* expectation that the higher the level of SHEQUITY, the higher the level of PBIT. The result is consistent with the findings of [1].

Hypothesis Two

There is no significant relationship between PBIT and LTDEBT.

The result of the regression analysis shows that Long-term Debt (LTDEBT) and Profit before Interest and Tax (PBIT) are negatively and significantly related. Based on the results, the null hypothesis is hereby rejected and the alternative hypothesis which states that there is a significant relationship between PBIT and LTDEBT is accepted. The significant relationship is negative. This result is in line with this study *a priori* expectation that the higher the level of SHEQUITY, the lower the level of PBIT. This result is inconsistent with the findings of [1].

5. CONCLUSIONS AND RECOMMENDATIONS

This study examined the relationship between capital structure proxied by both the Shareholder equity (SHEQUITY) and Long-term Debt (LTDEBT), on one hand and profitability proxied by Profit before Interest and Tax (PBIT) on the other hand. The result indicates that profitability is positively and significantly related to Shareholder Equity. Also PBIT and Long-term Debt are negatively and significantly related. This finding indicates that the capital structure and profitability are positively related. This result support the pecking order theory which opined that firm should finance their assets and operations firstly from their internally generated cash, then on debt issue and lastly on the equity issue. They opined that cost of debt will have negative impact on the level of profitability of the firm and issuance of new equity will dilute the ownership structure of the firm and reduce the percentage of profit due to existing shareholders on the long run. Hence the most preferred source of finance to minimize cost of capital, maximize profit and maximize of firm value is internal source. It is therefore recommended that firms' managers in the agriculture and agro-allied sectors should prioritise the generation of sufficient reserves to finance their future business needs.

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