



**The Effect of Capital Structure Choice on the Performance of Corporate Organizations:  
A Case of Quoted Agro-Based Firms in Nigeria**

**Bassey, Nsikan Edet<sup>1</sup>**

Akwa Ibom State University, Ikot Akpaden, Mkpato Enin, Akwa Ibom State, Nigeria

**Ukpe, Offiong Uma**

Akwa Ibom State University, Ikot Akpaden, Mkpato Enin, Akwa Ibom State, Nigeria

**Solomon, Ubong Udo**

Hutton School of Business, University of the Cumberland, Williamsburg.

**Abstract**

The study analyzed the effect of capital structure choice on the performance of agro-based firms in Nigeria. Agro-based performance was measured using Return on Equity (ROE) and Return on Asset (ROA). Secondary data were collected from 20 quoted firms for the period 2007-2013 and analyzed using the Ordinary Least Square (OLS) regression technique. Data were first examined for stationarity using the Augmented Dickey Fuller unit root test. Result revealed that all the variables were stationary at levels except Return on equity (ROE), long-term debt (LTD) and Retained earnings (RE) that were later stationary at first difference. The OLS result revealed that the major positive determinants of performance were long-term debt, equity and retained earnings. Among the variables that impacted negatively on agro-based performance were total debts and short-term debts finances. Hence, to enhance agro-based performance, agro financial managers should avoid excessive debt, rather, in attempting to raise debt should employ moderate long-term debt that has long repayment period with less repayment pressure. They should also strive to retain part of their profit while ensuring high use of equity capital as part of their long-term financing decision.

**Keyword:** Agro-based firms; Performance and capital structure

**JEL Codes:** Q10, Q19

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<sup>1</sup> Department of Agricultural Economics and Extension, Akwa Ibom State University, Ikot Akpaden, Mkpato Enin, P.M.B. 1167, Uyo, Akwa Ibom State, Nigeria. Tel: +2348035535782, E-mail: [nebass2005@gmail.com](mailto:nebass2005@gmail.com)

## I. Introduction

One major problem facing agro-based financial managers in developing countries is how to finance their operations. Raising capital to finance the firm's investments is an important function of the financial manager. The decision is important not only because of the need to maximize returns to various organizations' constituency but because of the impact such a decision has on the organization's ability to deal with its competitive environment (Roy and Li, 2002). Firm assets are financed by capital and these assets which are grouped into tangible and intangible assets are necessary for the growth and survival of the firm. Firms can be financed either by increasing the owner's claims or the creditor's claim or both. While the owners' claim increases when the firm acquired capital by issuing shares or by retaining part of her earnings, the creditors' claim increases by borrowing. Hence, the compositions of both funds indicate the capital structure of the firm. It differs from financial structure in that while the former refers to the proportionate relationship between long term debts and equity capital, the later implies various means use to raise capital (Pandey, 1999). Capital structure represents the way a firm finances its assets across the blend of debts, equity and hybrid securities (Saad, 2010).

There are basically two types of fund a firm can raise; debt and equity. Financing a project through equity entails selling part of the ownership interest in business to investors in an exchange for capital. It is less risky in the sense of cash flow commitment but results in dilution of ownership and earnings. Also, Equity funds can also be obtained by ploughing back a portion of the earnings available for shareholders. This method of acquiring funds internally is known as retained earnings. When retained earnings are not tied to investors, they become available for immediate use, hence, constitute a major source of equity capital. Unlike debt, equity capital has no maturity period and hence, no obligation for managers to repay. However, the major problem with equity is finding investors who are willing to buy into your business.

In contrast, debt entails borrowing money to be repaid together with accrued interest. It results in liability that must be serviced and hence, there are cash flow implications regardless of the project's success or failure. It includes loans and other forms of credit. Debt does not lead to dilution of ownership. This is because since lenders are entitled only to repayment at agreed interest rate and conditions, they have no direct claims on future profit of the firm. Also, raising debt is less complicated than equity because the firm is not required to comply with financial securities law and regulations. However, the larger the company's debt equity ratio, the morerisky the firm is considered by investors.

Following the ground breaking work of Franco Modigliani and Miller commonly termed the M & M theory published in their seminar paper in 1958, studies on capital structure have increased along different directions. Some have incorporated new variables that were not used by M & M in their initial study. Several models have also been built on the literature explaining the financial behavior of firms. Studies on capital structure are important because; First, it affects corporate financing decision which in itself is associated with a wide range of policy issues (Abor, 2008). For instance, at the macro level, they have implication for capital market development, interest rate, security price determination and regulation. At the micro level, such decision affects capital structure, corporate governance and company development (Green et al.2002). Secondly, capital structure is tightly related to the ability of the firm to fulfill the needs of various stakeholders (Lawal et al 2014). Such needs includes employment generation, income in terms of profit, dividend and wages to household and foreign exchange to the government as well as being up to date with their discharge of corporate social responsibility. Thirdly, capital structure affects the firm's performance ( Akintoye, 2008, Taani, 2013, Umar et al.,2012) and have serious implication on the earning capacities of businesses ( Pandey, 1999). Lastly, apart from enabling firms maximize their fund use and adapt easily to changing conditions, it also has implication for the shareholders, earnings and risks which in turn affects the cost of capital and market value of the firm.

Numerous studies have been carried out on the effect of capital structure on firm performances in developing countries. Majority of these studies do not agree on the basis of their findings. While some posit that capital structure affects firm's performance (Akintoye, 2008; Umar et al., 2012; and Taani, 2013), others found a negative relationship between capital structure variables and firm performance (Ebaid, 2009 and Erioti et al., 2002). However, not much has been done in the agro based subsector. The few once in the literature in Nigeria concentrate on examining the determinants of capital structure. For instance, Bassey et al. (2013) analyze the determinants of capital structure of a sample of 60 unquoted agro-based firms in Nigeria using data for 2005-2010. Result revealed that only growth and educational level of firm owners were significant determinants of both long and short term debts. While asset structure, age of firms, gender of owners and export status impacted significantly on long term

debt ratio, only business risk, size and profitability of firm were major determinants of short term debt ratio of those firms. Bassey et al., (2014a) also examine the determinants of capital structure of agro-based firms in Nigeria using data generated from the financial statement of 28 agro-based firms which have been listed in the Nigerian Stock Exchange for 2005-2010. Result revealed that large sized firms were able to access more debt capital than small once. Highly tangible firms also used more short term debts. Also, highly profitable firms did not depend on short term debts. Firm's age and asset structure were positive and significantly related to long term debts. Bassey et al. (2014b) also examined and compared the capital structure and efficiency of capital employed between quoted and unquoted agro-based firms in Nigeria. Data collected from 88 agro-based firms for the period 2005-2010 were analyzed using Z-test, capital structure ratio and return on capital employed ratio analysis. Result revealed significant differences between the capital structure of listed and unlisted firms. Listed firms recorded the highest debt to equity ratio than unlisted firms. Short term debts also contributed a greater percentage of the total debt ratio of both sample groups. Unlisted firms were more efficient than listed firms in terms of return on capital employed. Therefore, considering the role of agro-based subsector in the overall development of the economy, a study of their capital structure and its effect on firm performances becomes imperative. Hence, this study analyzed the effect of capital structure on the performance of agro-based firms in Nigeria.

## II. Theories of capital structure

### II.I. The ancient theories of capital structure

Conflicting opinion has been expressed by researchers on the effect of leverage on the cost of capital. According to Pandey (1999) if leverage affects the cost of capital and the value of the firms, then an optimum capital structure can be obtained at the debt and equity combination that minimize all weighted average cost of capital. Two extreme views were identified by Durand (1963); the net income approach and the net operating income approach.

- (i) **The net income approach:** This approach assumes that the cost of debt and that of equity are independent of the capital structure. In line with this approach, the weighted average cost of capital declines and the total value of the firm rises with increased use of debt
- (ii) **The net operating income approach:** Under this approach, the cost of equity is assumed to increase linearly with debt. This result on the weighted average cost of capital remaining constant and the total value of firm remaining constant as well. According to Pandey (1999), if the net income approach is valid, then debt is a significant variable and therefore, financing decision would affect the value of the firm. Also, if the net operating income approach is valid, then financing decision does not matter in the valuation of the firm.
- (iii) **The Traditional Approach:** This is also called the intermediate version advocated by Solomon (1963). This approach is a mid-way between the first and second approach. It assumes that the cost of capital decreases within the reasonable limit of debt and then increases with debt. Put differently, as the cost of capital decline, the value of the firm increases with debt up to an optimum point where the cost of capital would increase while the value of firm declines.
- (iv) **Modigliani and Miller Theory:** Franco Modigliani and Miller commonly known as M & M came up with a proposition in their seminal paper in 1958. They supported the net operating income approach by denying the existence of an optimum capital structure. They had two prepositions; MM-1 and MM-2.
- (v) **MM-1 Proposition:** M&M proposed in 1958 that in an efficient market world with no taxes or bankruptcy cost, the value of the firm is not affected by the manner in which the firm is financed. The theory posited that the value of the firm and hence, the wealth position of stockholders are not affected by the capital structure.
- (vi) **MM-2 Proposition:** This was proposed by M & M in 1963. The theory recognizes that firm value is relevant to its capital structure. According to this theory, the capital structure of the firm is optimum with 100 percent debt due to interest and tax shield. Put differently, firm should use as much debt capital as possible in order to maximize their value by maximizing tax shield.

However, amid the aforementioned approaches and propositions, modern researchers such as Frank and Goyal, (2004); and Harris and Raviv, (1991) have continued to argue that there is no universal theory of capital structure. Therefore, even though the aforementioned approaches were based on certain unrealistic assumptions, they served as a starting point to examine the capital structure of firm.

### II.II. Modern Theories of capital structure

Among the modern theories of capital structure includes:

**II.II.I. The pecking order Theory:** This theory was proposed by Myer and Majluf in 1984. According to the theory, firms prioritize their financing choices such that all internal funds are exhausted before looking for costly external funds. The theory has it that as firms seek more external financing, they will follow the pecking order of securities from safe to risky debts, convertibles and other quasi equity instruments before equity. A study by Fama and French, (2002) support this theory.

**II.II.II. The Agency cost theory:** This theory was developed by Berle and Means 1932. The theory tries to resolve the conflict of interest between owners and managers over the control of corporate resources through the use of contracts that seek to allocate decision rights and incentives. The theory observed that there is separation between ownership and control in larger corporation, as a result of dilution in equity position. The agency theory has implication for the conflict relationship between shareholders and debt holders. This conflict arises because their claims on the firm vary.

**II.II.III. The static trade off theory:** This was developed by Myer in 1984 and also termed the tax based theory. The theory attempts to balance the corporate tax advantage of debt financing against the cost advantage of bankruptcy as well as incorporating personal tax and non-debt tax shields. Studies such Green et al. (2002) and Abor (2008) have acknowledged the effect of tax policy on capital structure of firms. According to Abor, the advantage associated with leverage would lead firm to be completely financed through debt since corporate taxes allow firm to deduct interest on debt in computing taxable profit. Studies such as Kayhan and Titman (2007) and Owualah, (1998) lend credence to this theory.

### **III. Review of Related studies**

Empirical literature on the effect of capital structure on firm's performance is mixed.

Taani (2013) examines the impact of capital structure on performance of 12 Jordanian banks listed on Amman Stock Exchange for the period 2007-2011. Multiple regressions was applied on performance indicators such as Net Profit (NP), Return on Capital Employed (ROCE), Return on Equity (ROE) and Net Interest Margin (NIM) as well as Total Debt to Total Funds (TDTF) and Total Debt to Total Equity (TDTE) as capital structure variables. The results show that bank performance, which is measured by net profit, return on capital employed and net interest margin is to be significantly and positively associated with total debt; while total debt is found to be insignificant in determining return on equity in the banking industry of Jordan. Pratheepkanth (2011) conducted a study on the impact of capital structure on financial performance of business organizations in Sri Lanka during the period 2005 to 2009. The result of research validated a negative relationship between capital structure (CS) and financial performances of the Sri Lankan companies. Abor, (2005) examined relationship between capital structure and financial performance of firms' listed in Ghana Stock Exchange. He reported that total liabilities to total asset and current liabilities to total asset affects the firm profitability accounting measure ROE positively and long term liabilities to total asset negativel.

#### **III.I. A review of related studies in Nigeria includes**

Simon-Oke and Afolabi (2011), carried out a study on five quoted firms within a period of nine years (1999-2007) from the static trade-off and agency cost theory point of view using a panel data regression model. Results revealed a positive relationship between firms' performance and equity financing as well as between firms' performance and debt-equity ratio. They is also reported a negative relationship between firms' performance and debt financing due to high cost of borrowing in the country. Akintoye, (2008) in a study of the sensitivity of performance to capital structure confirms that the performance indicators (earnings before interest and taxes, earnings per share and dividend per share) used in his study were significantly sensitive to the capital structure in most of the companies

Lawal et al., (2014) Use data from 10 manufacturing firms in Nigeria from 2003-2012 to examines the effect of capital structure on firm's performance Descriptive and regression research technique was employed to consider the impact of some key variables such as Returns on asset (ROA), Returns on equity(ROE),Total debt to total asset (TD), Total debt to equity ratio(DE) on firm performance. Findings revealed a negative relationship between capital structure measures (total debt and debt to equity ratio) and firm performance. Chinamerem and Anthony, (2012) examines the impact of capital structure on financial performance of Nigerian firms using a sample of thirty non-financial firms listed on the Nigerian Stock Exchange during the seven year period, 2004 – 2010. Panel data for the selected firms were generated and analyzed using Ordinary Least Squares (OLS) as a method of estimation. The result shows that a firm's capital structure surrogated by debt ratio has a significantly negative impact on the firm's financial measures (Return on Asset, ROA, and Return on Equity, ROE). Findings further indicate consistency with prior empirical studies and provide evidence in support of Agency cost theory.

## IV. Methodology

### IV.I. Data Source

The study sourced data from the Nigeria Stock Exchange and Annual Statement of Accounts of the sampled firms. To qualify for selection, such agro-based firm must have been listed in the Nigerian Stock Exchange for the period 2007-2013. A total of 20 agro-based firms were selected and used for the study. These firms were; Livestock Plc, Unilever Plc, Nigerian Breweries, UAC of Nigeria Plc, Guinness Nigeria Plc, Okumu Oil, Chellaram Plc, Nestle food Plc, Cadbury, Flour Mills Plc, Presco Nig Plc, UTC Plc, International Breweries, P. S. Madrides, Ferdinand Oil Mill, Okitipupa Plc, Big Treat, Champion Breweries, Ellah lakes Plc and Afprint Plc

### IV.II. Model specification

#### IV.II.I. Data Analysis

The study employed econometric model of Ordinary Least Square (OLS) regression analysis to analyze those variables that affect the performance of agro-based firms in Nigeria. In this study, Return on Asset (ROA) and Return on equity (ROE) were two independent variables used as a measure of firm performance. Their choice was as a result of their widely acceptable nature and use by other researchers as a measure of performance. For instance, authors such as Akintoye, (2008), Rao et al.,(2007), Lawal et al.(2014) and Taani,(2013) used both ROA and ROE in their studies. The generalized form of the multiple regression models is specified as:

$$Y = \alpha + \sum \beta X + \epsilon \dots \dots \dots (1)$$

Where

Y = Performance of the firms and represents the dependent variable in the model (ROA and ROE)

$\alpha$  is the constant intercept of the equation.

$\beta$  represents the coefficients for the explanatory variables in the estimated model.

X is the vector of explanatory variables in the estimation model.

$\epsilon$  is the error term.

$\Sigma$  is the summation sign.

Accordingly, we express performance as a function of capital structure variables in our model as;

$$ROE_t = f ( STD_t, LTD_t, TD_t, RE_t, EQ_t, ) + \mu \dots \dots \dots (2)$$

$$ROA_t = f ( STD_t, LTD_t, TD_t, RE_t, EQ_t, ) + \mu \dots \dots \dots (3)$$

It is stated econometrically in line with the method of Taani,(2013) as follows:

$$\text{LogROE}_t = b_0 + b_1 \text{logSTD}_t + b_2 \text{logLTD}_t + b_3 \text{logTD}_t + b_4 \text{logEQ}_t + b_5 \text{RE}_t + \mu \dots \dots (4)$$

$$\text{LogROA}_t = b_0 + b_1 \text{logSTD}_t + b_2 \text{logLTD}_t + b_3 \text{logTD}_t + b_4 \text{logEQ}_t + b_5 \text{RE}_t + \mu \dots \dots (5)$$

Where:

$ROE_t$  = Return on equity of agro-based firm i in period t; measured as a ratio of net profit after tax to shareholder's funds.

$ROA_t$  = Return on asset employed by firm i in period t measured as the ratio of Net profit after tax to total asset of firm i in period t

$STD_t$  = Short term debt of firm i in period t measured as ratio of short term debt to total capital employed by firm i. That is short term debt/ equity + debt

$LTD_t$  = Long term debt of firm i in period t measured as ratio of long term debt to total capital employed by firm i. That is long term debt/equity + debt

$TD_t$  = Total debt of firm i in period t measured as the ratio of total debt of firm i to total asset of firm i. That is Total debt of firm i/ Total asset of firm i

$RE_t$  = Retained earnings of firm i in period t measured as the amount profit retained by firm i in time t;

$EQ_t$  = Equity capital of firm i in period t measured as the summation of total shareholders fund (Retained earnings was not included as part of equity).

$\mu$  = Stochastic error term

#### IV.II.II. Estimation Procedure

Analysis was carried out using Econometric software (E-View 7.1). The estimation procedure employed was:

##### (i). Unit root test:

Numerous time series data use in econometric analysis are often non-stationary meaning they have the tendency to either decrease or increase over time. Engle and Granger (1987) averred that such data if use for regression analysis would lead to spurious regression. Therefore, in order to test for stationarity of the variables, an Augmented Dickey

Fuller (ADF) test was used to carry out the unit root. The ADF test minimizes autocorrelation in the error term since it involves the first difference in lags and captures additional dynamics left out by the DF thereby ensuring that the error term is distributed as white noise. The test formula for ADF is shown as;

$$\Delta Y_t = \alpha + \rho Y_t - 1 + \sum_{i=1}^j Y \Delta Y_t - j + U_t \dots \quad (6)$$

Here the lag length  $j$  chosen for ADF ensure  $U_t$  is empirical white noise. The significance of  $\rho$  is tested against the null that  $\rho = 0$  based on the t statistics obtained from the OLS estimated in equation (3). If the null hypothesis of non stationarity cannot be rejected, the variables are difference till they become stationary, that is, till the existence of a unit root is rejected. The next step was to carry out a granger causality test, the procedure which is discussed below.

## V. Findings and Discussion

### V.I. Unit Root test for variables use in the Analysis

In order to ascertain the stationarity of variables employed in the study, The ADF test was carried out. The test statistics for each variable in level and first difference are presented in Table 1. Result revealed that while Return on Asset (ROAt), short- term debt (STDt), Total debt (TDt), Equity ( EQ<sub>t</sub>) were stationary at levels, Return of equity (ROEt), long term debt (LTDt) and Retained earnings (REt) were stationary at first difference.

**Table 1: Result of Unit Root test for variables used for the Analysis**

Variable	Augmented Dickey- Fuller		OT
	Level	First Difference	
Ln ROE <sub>t</sub>	-2.1676	-4.6462	1(1)
Ln ROA <sub>t</sub>	-4.6723***	-	1(0)
Ln STD <sub>t</sub>	-7.4852***	-	1(0)
Ln LTD <sub>t</sub>	-2.1844	-3.9961***	1(1)
LnTD <sub>t</sub>	-4.4281***	-	1(0)
Ln EQ <sub>t</sub>	-3.1625**	-	1(0)
Ln RE <sub>t</sub>	-2.3138	-8.3138***	1(1)
1%	-3.256	-3.321	
5%	-2.831	-2.936	

**Note:** OT means order of integration. Critical values (CV) are defined at 1% and 5% significant levels and asterisks \*\*,\*\*\* represent 5% and 1% significance levels. Variables are as defined in equation (4) and (5)

### V.II. Testing for the short and Long-run Relationship

After ascertaining the stationarity of the variables, an attempt was made to carry out a co-integration test and estimate the error correction model. This was, however, not possible because of the small number of observation, so we proceeded to carry out the Ordinary Least Square (OLS) regression analysis, the result which is discussed in the following sub sections.

### V.III. Regression result for the determinants of agro-based performance as measured by ROE

Table 2 presents the OLS result for the effect of capital structure variable on the performance of agro-based firms as measured by ROE. Result showed R<sup>2</sup> value of 0.7265, implying that about 72.65 percent of the total variability in the ROE is explained by the explanatory variables in the model. The calculated F-statistic value of 16.42, significant at 1 percent probability level indicates the goodness of fit of the estimated model. The Durbin Watson statistics value of 2.02 indicates the absence of auto correlation in the estimated model.

From result, the coefficient for short term debt (STD<sub>t</sub>) was negative and insignificantly related to ROE. This is expected because short term debt would reduce firm's investment opportunities in that money that would have been channel into prospective investment would be used for debt servicing and repayment, thereby reducing the firm's liquidity position. Ebaid (2009) also reported an insignificant relationship between short term debt and ROE

The coefficient for long term debt (LTD<sub>t</sub>) was positive and significantly related with ROE at the 5 percent level of significance. Its coefficient shows that increasing long term debt by 10 percent would increase ROE by 11.87 percent. The positive sign is in line with theoretical literature. The plausible explanation for this is that since LTD

has a long duration repayment period, there is less repayment pressure, hence, less effect on the liquidity position of the firm. This finding corroborates those of Abor, (2005) and Mesquita and Lara (2003). It also contradicts those of Ebaid (2009) and Lawal et al (2004).

The variable for total debt (TD<sub>t</sub>) carried a negative sign and was significant at the 5 percent level of probability. Its coefficient shows that increasing total debt by 10 percent would reduce ROE by 23.24 percent. The reason for this is that excessive debt reduces the firm's net profit since part of the earnings would be channel to debt servicing and repayment. Also, increase in debt increases the cost of capital. This is true given that interest is a cost element that is often deducted from profit before return on equity is computed. It might also be because of high agency conflict, firms over leverage themselves resulting in poor performance. However, this negative relationship is surprising and at variance with the agency cost theory. According to the theory, high leverage reduces the agency costs of outside equity and increases the firm's value by encouraging managers to act more in shareholder's interest. Higher leverage is expected to lower agency costs, reduce inefficiency leading to improvement in a firm's performance (Akintoye, 2008). This finding support those of Lawal et al., (2014) and Rao et al.(2007). However, Ebaid (2009) found no significant influence of TD on ROE in Egypt.

The equity coefficient (EQT<sub>t</sub>) was positive and significantly related with ROE at the 10 percent probability level. Its coefficient shows that increasing equity by 10 percent would increase ROE by 16.27 percent. This is surprising because dilution of ordinary shares which forms the basis of measurement of ROE means increasing the numbers of shares upon which the final earnings are spread, therefore a negative relation was envisaged. The plausible explanation might be that managers of these firms were able to ensure prudent management of the equity funds resulting in a more than proportional increase in corporate profit. This result supports Simon-Oke and Babatunde (2011) who reported a positive relationship between performance and equity finance. It is also corroborates Bassey et al (2014b) who reported that listed agro-based firms were more efficient than unlisted ones in terms of ROCE due to high use of equity capital.

**Table 2: OLS Estimated Coefficients of capital structure variables as it relate to ROE**

Variable	Estimate coefficient	Standard Error	t-statistics
Constant	-4.9631	2.7436	-1.8089
LogSTD <sub>t</sub>	-0.4820	0.4673	-1.0315
LogLTD <sub>t</sub>	1.1871	0.4066	2.9193**
LogTD <sub>t</sub>	-2.3240	0.7462	-3.1145***
Log EQT <sub>t</sub>	0.1627	0.0831	1.9572*
LogRE <sub>t</sub>	0.1904	0.0303	0.2701
<b>Diagnostic statistics</b>			
R <sup>2</sup> = 0.6951		DW = 2.02	
Fcal = 16.42	Akaike Criterion = 142.86	Schwartz Criterion = 188.34	
Hanan-Quinon Criterion= 106.54		Dependent Variable: ROE	

Note: Asteriks, \*\*\*, \*\* and \* represent 1%, 5% and 10 % . Variables are as defined in equation (4) and (5) . **Source:** Author's estimation

#### **V.IV. Regression result for the determinants of agro-based performance measured by ROA**

Table 3 presents the regression result for the effect of capital structure variables on firm performance measured as ROA. Result shows R<sup>2</sup> value of 0.648, indicating that about 64.8 percent of the total variability in ROA is explained by the explanatory variable in the model. The F statistics value of 11.64 was significant at 1 percent denoting the appropriateness of the estimated model. From the result, the coefficient for short-term debt (STD<sub>t</sub>) was negative and significantly related to performance. Its coefficient shows that increasing short-term debt by 10 percent would reduce ROA by 18.74 percent. This is in line with theoretical literature because short-term debt increases the debt pressure on investors, leaving them with less liquidity thereby reducing their chances of investing in long term projects with prospects. This invariably affects their net earnings. This finding is in line with Ebaid (2009).

The long-term debt coefficient (LTD<sub>t</sub>) was positive and significant with ROA at the 5 percent significance level. Its coefficient revealed that increasing LTD<sub>t</sub> by 10 percent would increase ROA by 26.74 percent. This is in line with a priori expectation because long term has a long repayment period and hence, reduces the repayment pressure associated with short-term debt repayment. As a result, firm are left with ample time to invest the borrowed funds

and presumably make huge returns during periods of favorable business activities. This result supports those of Philips and Sipahioglu, (2004) and Taani (2013).

The variable for total debt ( $TD_t$ ) was negative and significantly related with ROA at the 1 percent level of significance. Its coefficient shows that increasing  $TD_{it}$  by 10 percent would reduce ROA by 35.24 percent. This is expected because excessive leverage reduces the earning capacities of businesses. This finding does not support the agency theory which suggests that debts can be used to discipline managers and made them focus on avenues that would boost performance so as to save their jobs and ego. According to Grossman and Hart (1982), excessive debt may affect managers and reduces agencies cost theory threat of liquidation resulting in personal loses in the form of manager’s salaries, their reputation, prerequisites etc. Studies such as Umar et al (2012), Ebaid,(2009), Akintoye (2008) and Rao et al (2007) also reported a negative significant relationship between total debts and ROA. In another study, Campello (2015) reported that moderate firm debt was associated with sales gain but after some point higher relative indebtedness leads to significant sales underperformance.

The variable for retained earnings ( $RE_t$ ) carried the expected positive sign and was significant at the 5 percent level. Its coefficient shows that increasing retained earnings by 10 percent would increase ROA by 7.255. This is expected because increasing the retained earnings would enhance the liquidity position of firms and capital base of the firm and at the same time place them at advantage position to broaden their investment horizon and undertake investment in risky but profitable ventures. The significance of retained earnings lend support to the pecking order theory which suggest that highly profitable firms tend to finance their investment opportunities with retained earnings and would seek for costly external funds after exhausting their internal sources of funding (Myer and Majluf in 1984).

**Table 3: OLS Estimated Coefficients of capital structure variables as it relate to ROA**

Variable	Estimate coefficient	Standard Error	t-statistics
Constant	-1.4865	0.2163	-6.863
LogSTD <sub>t</sub>	-1.8741	0.5301	-3.5356***
LogLTD <sub>t</sub>	2.674	0.9824	2.7219**
LogTD <sub>t</sub>	-3.524	1.1080	-3.1805***
Log EQT <sub>t</sub>	0.3315	0.2751	1.2050
LogRE <sub>t</sub>	0.7257	0.2932	2.4761**
<b>Diagnostic statistics</b>			
$R^2 = 0.648$	Adjusted $R^2 = 0.565$	DW = 1.994	
Fcal = 11.64	Akaike Criterion = 166.18	Schwartz Criterion = 197.42	
Hanan-Quinon Criterion= 121.76		Dependent Variable: ROA	

Note: Asteriks, \*\*\*and\*\* represent 1% and 5% respectively. Variables are as defined in equation (4) and (5).

Source: Author’s estimation

## VI. Conclusions

The study examined the effect of capital structure variables on the performance of agro-based firms in Nigeria using ROA and ROE as measure of firm’s performances. Result showed that while long term debt exerted a significant positive influence with both ROA and ROE, Total debt had a significant negative influence on both ROA and ROE. This shows that excessive leverage is detrimental to agro-based firm’s performances. Surprisingly, equity capital had a positive significant influence on ROE and a positive insignificant influence on ROA. Also, short-term debt had a negative relationship with ROA and ROE but was only significant with ROA. Retained earnings also had a significant positive influence on ROA. The study concludes that the major positive determinants of performance in the firms under investigation were long term debt, equity and retained earnings and that excessive indebtedness is detrimental to firm’s performance.

## VII. Recommendations

The following recommendations are made from the findings:

- (i) Managers of agro-based firms should strive to retain some of their net profit as part of their long term financing decision. This would discourage excessive borrowing. Also apart from facilitating their investment in long-term projects that is capable of generating a consistent string of income, it would also enable them enjoy economy of scale. If possible, dividend should only be paid when the firm does not have future profitable investment opportunities.

- (ii) The study makes a strong case for the use of equity capital but suggest that it should be well managed to generate profit that is commensurate with such an increase. Also, debt should be sought after exhausting all internal sources of funding available.
- (i) From the study only long term debt had a positive significant influence on ROA and ROE, hence, excessive debt is not recommended as a source of agro-based financing because it reduces the firm's net profit. However, financial managers should seek for and employed low interest long-term debts. This would reduce the excessive repayment pressure associated with debt servicing and repayment. However, its ratio should not be too high

### Areas for further research

Given the above findings, future research should be directed towards unquoted agro-based firms with view to ascertaining whether the effect of capital structure on firm performances varies among listed and unlisted firms

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