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# CAPITAL STRUCTURE AND FIRM PERFORMANCE NEXUS IN NIGERIA: A CASE STUDY OF ALUMINUM EXTRUSION COMPANY PLC

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***ABSTRACT*** *This study investigated the link between capital structure and firm performance in Nigeria using Aluminum Extrusion Company PLC (ALEX), a company listed under the Basic material sector of the Nigerian Stock Exchange as a case study. The study adopted return on capital employed as proxy for firm performance (response variable), while capital structure components such as debt to equity ratio, debt to capital employed ratio and equity to capital employed ratio were used as the explanatory variables. Secondary data were collected from the annual published financial reports of the company for the period 2009 to 2018. The study employ descriptive statistics and multiple regression technique based on the E- view 9.0 Software as the methods of data analysis. The results revealed that debt to equity ratio has significant positive effect on return on capital employed, debt to capital employed ratio has negative influence on return on capital employed and equity to capital employed ratio has no influence on return on capital employed. Overall, capital structure has no significant effect (at 5% level) on firm performance. Based on the findings, the study recommended among others that the company should finance her activities with retained earnings and use debt as the last option as this is in agreement with the perking Order theory; that the indirect effect of capital structure on firm performance be analyzed by future researchers and that the company managers are advised to be extremely conscious in the use of debt financing as an option in their capital mix up to the optimal limits, as debt to equity ratio provides positive effect though not significant on performance.*

**KEYWORDS**: capital, structure, returns, equity, debt, employed, performance, firm

## INTRODUCTION

(ALEX) is a leading manufacturing company in Nigeria producing and marketing extruded aluminum products in different colours and wood products. Products in its extensive range include CEGO fly screens; projected window systems for institutions in education, government, military and commercial sectors; industrial door systems designed for versatility and performance; partitioning systems with robust wear and tear features; multi-purpose stack extrusions for the maritime, aviation and construction sectors; swing door systems for commercial entrances; sliding window systems with removable operating sashes and bead-glazed, fixed louvers with fabricated railings; special products available in round bars, T-sections, symmetric and square aluminum frames; curtain walls attached to building structures; AS46 fly screens and customized fixed casements (windows and doors). ALEX has annual capacity of 5000 tons of aluminum extrusion products and produces profiles in a press finish, wood finish, silver and bronze colour palette and modern power-coated forms. The company has operations in Aba and Abuja to serve the eastern

and northern regions of Nigeria. Its share price and market capitalization as at Monday 5th August 2019 were NGN8.10 and NGN1,781,643,600.00 respectively.

The function of capital structure as a tool in funding the development and overall growth of firms has been severally discussed in accounting and finance literature. According to Arulvel and Ajanthan 2013, the choice of capital structure is an important decision for firms to consider, it is not only important in regards to profit maximization but also in terms of a firm having the ability to operate successfully in a competitive environment. Along with capital budgeting, working capital management, and dividend policy, capital structure is one of the major topics taught in financial management courses. Capital structure decision mainly deals with the question of how much debt (if any) is needed to optimize the value of a firm. Gerestenberg (2013) stated that capital structure of a company refers to the composition or make up of its capitalization. It includes all long term capital resources such as loans, reserves, shares and bonds.

Keown, Scott, Martin and dan Petty (2010) defined capital structure as balancing the array of financing sources in a proper manner, that is, in a relative magnitude or in proportions. Chandra (2015) explained that capital structure is essentially concerned with how the firm decides to divide its cash flow into two broad components: a fixed component that is earmarked to meet the obligations towards debt capital; and a residual component that belongs to equity share only. Capital structure refers to a company's outstanding debt and equity. It allows a firm to understand what kind of funding the company uses to finance its overall activities and growth. In other words, it shows the proportions of senior debt, subordinated debt and equity (common or preferred) in the funding. The purpose of capital structure is to provide an overview of the level of the company's risk. As a rule of thumb, the higher the proportion of debt financing a company has, the higher its exposure to risk will be.

Capital structure is commonly known as the debt-to-equity ratio. A company's capital structure points out how its assets are financed. When a company finances its operations by opening up or increasing capital to an investor (preferred shares, common shares, or retained earnings), it avoids debt risk, thus reducing the potential that it will go bankrupt. Moreover, the owner may choose debt funding and maintain control over the company, increasing returns on the operations. Debt takes the form of a corporate bond issue, long-term loan, or short-term debt. The latter directly impacts the working capital. Having said that, a company that is 70% debt-financed and 30% equity-financed has a debt-to-equity ratio of 7:3; this is the leverage. It is very important for a company to manage its debt and equity financing because a favorable ratio will be attractive to potential investors in the business. (www.divestopedia .com)

Barbosa and Louri, (2005) pointed out that corporate performance can be measured by variables which involve productivity, profitability, growth (sales, market share or asset size), or even customers satisfaction. These measures are related among each other. Financial measurement is one of the tools that indicates the financial strengths, weaknesses, opportunities and threats of a firm; such measurements are return on total asset (ROTA) or return in asset (ROA) or return on investment (ROI), return on capital employed (ROCE), return on equity (ROE), net profit margin (NPM), earnings before interest and tax (EBIT), net profit after tax plus interest, etc. This study

was therefore focused on analyzing the link between capital structure and corporate performance using Aluminum Extrusion Company PLC (ALEX), Nigeria as a case study.

One thing that is common and important among firms globally is the choice of funding decisions managers face. Some empirical studies revealed that capital structure is one of the important determinants affecting the performance of a company. For instance, the results of a study by Wong (2014) showed that capital structure is positively related to common stock returns and risk. Wong (2014) also found out that a company's performance measured by ROE has a negative relationship with long-term debt ratio in construction companies. Therefore, it is obvious that managing capital structure is one of the primary financial decisions that are related to corporate value maximization. The problem is how does a firm decide on its optimal capital structure? Should the managers use more debt as opposed to equity? If so how do the managers determine the target debt level? What will be the risk elements of investors when firms are heavily financed from debt particularly the issuing of bonds, loans and reserves? Will a firm's growth depend on the choice of debt-equity ratio? Will companies using more debt than equity to finance their assets have a high leverage ratio? Or will companies using more equity than debt to finance their assets have a higher leverage? Or will the choice of debt/ total capital employed be the right choice? Nor the choice of equity/ total capital employed? What will be the right mix of the various sources of funds to attain optimal level? Does corporate performance influence the choice of capital structure?

These constructs on the choice of capital structure mix had been looked into by several scholars and none of them has come into an agreement or consensus on the right choice or decision to be applied. Hence, this research was carried out to fill this literature gap in past studies. Thus this study aimed to analyze the link between capital structure and corporate performance of the basic materials sector companies in Nigeria, using Aluminum Extrusion PLC (ALEX) as a case study.

## REVIEW OF RELATED LITERATURE

### Conceptual review

Some scholars have viewed the concept of capital structure and defined it according to their own perception. However, there are others who also see capital structure as financial leverage, financial structure or capital gearing (www.investopodia.com). The concept of capital structure describes the mix of a firm's long-term capital, which consists of a combination of debt and equity. Capital structure is a permanent type of funding that supports a company's growth and related assets. Expressed as a formula, capital structure equals debt obligations plus total shareholders' equity: capital structure may also be referred to as "capitalization structure," or just" capitalization"— not to confuse this with market capitalization which is different, anyway.

The equity portion of the debt-equity relationship is the easiest to define. In a capital structure, equity consists of a company's common and preferred stock plus retained earnings. This is considered invested capital and it appears in the shareholders' equity section of the balance sheet. Invested capital plus debt comprises capital structure. Investment literature often equates a company's debt with its liabilities. However, there is an important distinction between operational liabilities and debt liabilities, and it's the latter that forms the debt component of capital structure—

but that's not the end of the debt story. Investment research analysts do not agree about what constitutes a debt liability (investopodia.com).

Many analysts define the debt component of capital structure as a balance sheet's long-term debt. However, this definition is too simplistic. Rather, the debt portion of a capital structure should consist of: short-term borrowings (notes payable); the current portion of long-term debt; long-term debt; and two-thirds (rule of thumb) of the principal amount of operating leases and redeemable preferred stock. When analyzing a company's balance sheet, seasoned investors would be wise to use this comprehensive total debt figure (investopodia.com).

Saad, (2010) says that the choice of a capital structure is an important decision for a firm. To him it is important not only from are turn maximization point of view, but also, that this decision has a great impact on a firm's ability to successfully operate in a competitive environment. He went ahead to say that the ability of companies to carry out their stakeholders' needs is highly related to capital structure. Therefore, this derivation that is capital structure is an important fact that we cannot omit. He further stated that capital structure in financial term means the way a firm finances their assets through the combination of equity, debt, or hybrid securities.

Arulvel and Ajanthan (2013) in his opinion stated that "along with capital budgeting, working capital management, and dividend policy, capital structure is one of the major topics taught in financial management courses. He believes that capital structure decision mainly deals with the question of "How much debt (if any) is needed to optimize a firm value". If firm values can be negatively affected from the wrong debt decision, it becomes imperative to answer this question. Hence, he believed that capital structure indicates to a firm's financial frame work which consists of the debt and equity used to finance the firm and that capital structure is one of the popular topics among the scholars in finance field. In short, he believed that capital structure is a mixture of a company's debts (long-term and short-term), common equity and preferred equity. Thus capital structure is essentially on how affirm finances its overall operations and growth by using different sources of funds.

In the words of Chandra (2015) "Capital structure is essentially concerned with how the firm decides to divide its cash flows into two broad components, affixed component that is ear marked to meet the obligations toward debt capital and a residual component that belongs to equity shareholders". Capital structure is the mix of the long-term sources of funds used by a firm. It is made up of debt and equity securities and refers to permanent financing of a firm. It is composed of long-term debt, preference share capital and share holders' funds.

**Importance of Capital Structure**

Decisions relating to financing the assets of affirm are very crucial in every business and the finance manager is often caught in the dilemma of what the optimum proportion of debt and equity should be like. As a general rule there should be a proper mix of debt and equity capital in financing the firm's assets. Capital structure is usually designed to serve the interest of the equity shareholders because they are the owner's of the firm. Therefore instead of collecting the entire fund from shareholders to finance the firm apportions of long term fund may be raised as loan in the form of

debenture or bond by paying a fixed annual charge. Though these payments are considered as expenses to an entity, such method of financing is adopted to serve the interest of the ordinary shareholders in a better way.

**Maximization of a firm**
Capital structure maximizes the market value of a firm, that is, where a firm shows a properly designed capital structure the aggregate value of the claims and ownership interests of the shareholders are maximized.

**Cost Minimization**
Capital structure minimizes the firm's cost of capital or cost of financing. By determining a proper mix of fund sources, a firm can keep the overall cost of capital to the lowest.

**Increase in Share Price**
Capital structure maximizes the company's market price of share by increasing earnings per share of the ordinary shareholders. It also increases dividend receipt of the shareholders.

**Investment Opportunity**
Capital structure increases the ability of the company to find new wealth-creating investment opportunities. With proper capital gearing it also increases the confidence of suppliers of debt.

**Growth of the Country**
Capital structure increases the country's rate of investment and growth by increasing the firm's opportunity to engage in future wealth-creating investments.

**Patterns of Capital Structure**
There are usually two sources of funds used by a firm: Debt and equity. A new company cannot collect sufficient funds as per their requirements as it has yet to establish its credit worthiness in the market; consequently they have to depend only on equity shares, which is the simple type of capital structure. After establishing its credit worthiness in the market, its capital structure gradually becomes complex. A complex capital structure pattern may be of the following forms:

i. Equity Shares and Debentures (i.e. long-term debt including Bonds etc.),
ii. Equity Shares and Preference Shares,
iii. Equity Shares, Preference Shares and Debentures (i.e. long term debt including Bonds etc.).

However, irrespective of the pattern of the capital structure, a firm must try to maximize the earnings per share for the equity share holders and also the value of the firm.

**Concept of corporate performance**
According to Ngerebo (2009) noted that corporate performance involves the area of business intelligence which ensures that organizations' performance are measured against laid down objectives of the company. To him, the key indicators of performance are revenue, return on investment, profitability and market share. Hence, whenever the key performance indicators are in favourable states, it indicates efficiency. While, any form of adverse condition shows inefficiency in performance. Specifically, Ngerebo (2009) further stated that the well performing organizations

must be ones which can achieve their set objectives, which are profitability, survival, growth, market share, productivity and social responsibility.
In the opinion of Richard, Devinney, Yip, and Johnson (2009), corporate performance comprises the actual output or result of an organization as measured against its intended output or goals and objectives. To him, corporate performance encompasses three specific areas of firm outcomes:

a. Financial performance (profit, return on investment, etc);
b. Product market performance (sales, market share, etc); and
c. Shareholders return (total shareholder return, economic value added, etc).

## THEORETICAL FRAMEWORK

Although there are numerous capital structure theories only the four most pervasive capital structure theories, the trade-off theory, dynamic trade-off theory, pecking –order theory and market timing theory will be reviewed for the purpose of this study. However, the departure point for virtually all discussions on capital structure theory is the Modigliani and Miller's capital structure irrelevance theory first published in 1958. According to the Modigliani-Miller theory the way in which a firm finances its assets (through the mix of debt and equity) can have an impact on the value of a firm. The value of the firm is derived from the productivity and quality of the assets in which the firm has invested.

### The Market Timing Theory

Market timing refers to the practice of issuing shares when equity valuations are higher relative to book and past market valuations and repurchasing equities when their market values are low. As a consequence observed capital structures are a function of the past market values of securities rather than a desire to achieve an optimum capital structure or as a consequence of following a pecking order (Baker & Wurgler, 2002).

### The Trade-off Theory

The trade-off theory suggests that there is an optimum capital structure in which the benefits of debt are offset by the cost of debt. This optimal capital structure is achieved when the marginal benefit of an additional unit of debt is exactly offset by the marginal cost of an additional unit of debt (Fama & French, 2005).

### The Dynamic Trade-off Theory

Unlike the static trade-off theory, which implicitly assumes that firms always stay at target leverage by continuously adjusting leverage to the target, the dynamic version recognizes that financing friction make it sub optimal for firms to continuously adjust their leverage to the target, under the dynamic trade-off theory, firms weigh the benefit of adjusting their capital structures against the adjustment cost and make leverage adjustments only when the benefit outweighs the cost (Ovtchinnikov,2010).

Myers (1984) indicates that he is not fully satisfied with the explanation of dynamic trade-off theory insofar as frictions that prevent firms from staying at or near their ideal capital structure are not

mentioned to be of first order concern in the static tradeoff theory. Should cost be so large that it could serve force managers to take extended excursions away from their optimal capital structure, more time should be spend on understanding and explaining these frictions rather than refining the static trade-off theory (Myers, 1984).

**The Pecking Order Theory**

According to the pecking order theory firm's have no well -defined target debt/equity ratio and each firm's observed debt ratio simply reflect the firm's cumulative requirement for external finance over an extended period (Myers, 1984). According to the pecking order model the firms will first use internal funds (retained earnings) before issuing debt and will finally only issue equity under duress or when the investment requirement so far exceed debt capacity that it would lead to excessive leverage (Fama & French, 2005).

**Empirical Review**

A study had been done by Abor (2005) on the influence of capital structure on profitability of listed companies on the Ghana Stock Exchange during a five-year period. He found out that there is significant positive interrelationship between SD A and ROE and shows that firms which earn a lot use more short-term debt to finance their business. In other words, short-term debt is an essential source of financing in favour of Ghanaian companies, by representing 85 percent of total debt financing. Yet, the results showed the adverse relation between LDA and ROE. The regression output showed that there is positive relationship between DA and ROE which measure the relationship between total debt and profitability. This indicates that firms which earn a lot are depending on debt as their key financing option. In the early study on relationship between capital structure and a firm's reaction to short term financial distress had shown the result that high-leverage firms are more possible than their less leverages counter parts to react operationally to short-term distress. The high-leverage firms are also more possible to take personal actions such as restructuring assets and lying off employees when performance deteriorates. Apart from that, affirm with high leverage will react quickly in financial through cutting own dividend, restructuring debt and bankruptcy (Ofek, 1993).

A study (Akintoye, 2008) had been done on sensitivity of performance to capital structure on selected food and Beverage Company in Nigeria. The result shows that performance indicators to turn over (Earnings before Interest and Taxes, Earnings Per Share and Dividend Per Share) and the measures of leverage (Degree of Operating Leverage, Degree of Financial Leverage and Dividend Per Share) are significantly sensitive. There are many approaches in examining firm performance. Berger and Bonaccorsi (2006) had used profit efficiency as the performance measure. Manager's performance were evaluate by using profit efficiency because profit efficiency counter for the effectiveness of manager to raise revenue and control cost and is close to the concept of value maximization. By measuring the profit efficiency, shareholder losses from agency costs are relatively close to the losses of potential accounting profits. The result shows that neither higher leverage nor lower equity capital ratio are connected with higher profit efficiency for all range of data.

A research King and Santor (2008) had been done to examine the linkage between family ownership, firm performance and capital structure on Canadian firms. Based on Tobin's Q ratios, the result shows that self-supporting family owned firms with a single share class have similar market performance compared to other firms, superior accounting performance based on ROA, and higher financial leverage based on debt-to-total assets. Comparatively, family owned firms which use dual-class shares have valuations that are lower by 17% on average relative to broadly held firms, even though having similar ROA and financial leverage.

A study done by Nimalathasan and Valeriu (2010) on capital structure and its impact on profitability of listed manufacturing companies in Sri Lanka showed in their findings that debt-equity ratio is positively and strongly associated to all profitability ratios (gross profit, operating profit and net profit ratios). The study Pratheepkanth (2011) did on capital structure and financial performance of selected business companies in Colombo stock exchange Sri Lanka provided evidence that debt-equity ratio is negatively associated to financial performance.

Sunday (2015) in his study on capital structure and corporate performance in emerging markets such as Nigeria found that long-term debts contributes significantly and positively in boosting returns to equity owners. Also, Arowoshegbe and Idialu (2013) conducted a study on capital structure and profitability of quoted companied in Nigeria and found that leverage (debt-equity ratio) and firm performance are significantly and relatively associated. However, the study of Saeedi and Mahmoodi (2011) on capital structure and firm performance in Iran revealed evidence of positive association between capital structure components (short-term debt, long-term debt and total debt) and ROE.

A study by Akintoye (2008) found that performance measures (for instance returns on assets, earnings per share) are significantly responsive to leverage (degrees of financial leverage and operating leverage). The study aimed at investigating the relationship between capital structure and performance of selected food and beverage companies in Nigeria. Abor (2005) conducted a study on the influence of capital structure on profitability of listed companies on the Ghana Stock Exchange and found that short-term debt and return on equity (ROE) are significantly and positively related. The result also indicated that firms that earn a lot use more short-term debt to finance their business than firms that earn less. In other words, short-term debt is a vital source of financing operation of Ghanaian firms, because it represents 85% of total debt financing. Roden and Lewellen (1995) examined the capital structure of 48 U.S firms during the period 1981 to 1990 and their investigation revealed a positive relationship between profitability and capital structure.

Whereas, the study of Maina and Ishmail (2014) revealed components of capital structure (such as long-term debt, short-term debt and total debt) had no significant effect on the performance (Tobin's Q) of listed firms in Kenya. But that firm size, asset tangibility, opportunity growth and sales growth are important determinants of capital structure. Another study in Malaysia by San and Heng (2011) on capital structure and corporate performance based on construction companies revealed that capital structure and ROA, as well ROE had no relationship for large, medium and small construction companies.

Other studies showed either poor or no statistical relationship between capital structure and performance (Ebaid, 2009; Tang & Jang, 2007). Ebaid (2009) in particular, investigated the impact of capital structure choice on performance of 64 firms covering the period 1997 to 2005 in the Egyptian capital market. He employed three accounting-based measures of performance such as ROA, ROE and gross profit margin and concluded capital structure choices, generally, have a weak to no-impact on firm performance.

But the study carried out by Soumadi and Hayajneh (2012) examining the effect of capital structure on the performance of listed Jordanian firms found that capital structure is statistically and negatively in association with performance. Their study also found out that high financial leverage and low financial leverage firms have no significant difference in their performance. Their study utilized Ordinary Least Squares (OLS) technique in analyzing the data obtained from 76 firms for the period 2001 to 2006. Ahmad, Abdullah and Roslan (2012) examined the effect of capital structure on the firm performance of public listed companied in Malaysia covering two major sectors (consumer and industrial goods sectors). Fifty-Eight (58) firms were used as the sample covering the period 2005 to 2010. The results indicated that there is significant relationship between capital structure variables (long-term debt and short-term debt) and performance variable (return on assets). They found that short term debt is negatively and significantly related to returns on assets. In addition, Huang and Song (2006) found a negative correlation between leverage and performance (earnings before interest and tax to total assets) in Chinese firms. Kester (1986) found a negative relationship between capital structure and performance (profitability) in the U.S and Japan. Similar results were reported by Friend and Lang (1988), Rajan and Zingales (1995) in the G-7 countries.
The above discussed empirical evidences came out of research investigations that mainly reproduced the literature relating to developed economies and few developing countries. Hence, understanding the choice of capital structure mix to obtain an optimum leverage level by investors can hardly be understated for a developing economy such as in Nigeria, given the present state of the international capital markets.

## METHODOLOGY

This section shall contain a description of methods and procedures employed in carrying out this study such as research design, population and Sample of the study, model specification and data analysis techniques.

### Research Design

Research design is a framework or plan that is employed as a guide in collecting and analyzing the data for the study. It is a model of Proof that allows the researcher to draw inference concerning causal relations among the variable under investigation. The type of research design adopted in this study is the ex post facto (after- the- fact) research design. This design is a research design that is undertaken after the events have taken place and the data are already in existence. Ex post facto research, therefore, is a systematic empirical study in which the researcher does not possess the power in any way to control or manipulate the study variables. So for this study, Aluminum Extrusion Industries PLC (ALEX) is used as a case study.

**Population and Sample of the Study**

There is no population, sampling/ Sample size and sampling technique in this study because the focus of the study is a case study and data collected is secondary. Data was therefore sourced from the annual financial statements of Aluminum Extrusion Industries PLC (ALEX) for the period 2009 to 2018 through contented analysis, covering ten (10) years analysis. Data collected was subjected to the use of frequency distribution table data analysis with a view to describing the pattern, trend and growth of the variables assessed to test the hypothesis.

**Model Specification**

This study adopted a modified version of a regression model which has often been used by most researchers such as Etale (2019). The model is as follows:

$ROCE = f\ (DEEQ, DECA, EQCA)$

This can be translated into an equation as follows:

$ROCE = \beta_0 + \beta_1\ DEEQ + \beta_2 DECA + \beta_3 EQCA + \mu$

Where:

ROCE = Return on capital employed as a measure of firm performance (the dependent variable).

DEEQ= Debt to Equity ratio, one of the independent variables and a component of capital structure

DECE = Debt to capital employed ratio

EQCE= Equity to capital employed ratio

$\beta_0$= Constant or intercept term

$\beta_1$, $\beta_2$, $\beta_3$=coefficients or parameters of the independent variables to be estimated through the regression. Each of them by expectation is not equal to zero

$\mu$ = error term of the regression equation (stochastic variable)

Data Analysis Techniques

The study used descriptive statistics and multiple regression analysis based on the E- view 9.0 Software as the techniques of data analysis. The technique that possesses the unique property of the best linear unbiased estimator including efficiency and consistency when compared with other estimating techniques is multiple regression analysis.

## DATA PRESENTATION, RESULT AND DISCUSSION OF FINDINGS

Through content analysis of the company's annual financial statements, data generated in the study is presented in Table 1. The data represent average annual figures for the variables computed from the company's annual reports, included in the study for the ten years period 2009 to 2018.

Table 1: Average Annual Ratios of the Study Variables

| | Dependent Variable | Independent Variables | | |
|---|---|---|---|---|
| **Year** | **ROCE** | **DEEQ** | **DECE** | **EQCE** |
| 2009 | 2.80 | 99.19 | 49.80 | 50.20 |
| 2010 | 2.90 | 91.91 | 45.49 | 52.36 |
| 2011 | 3.48 | 84.91 | 43.21 | 54.51 |
| 2012 | 3.68 | 76.07 | 41.18 | 56.80 |
| 2013 | 3.82 | 70.02 | 36.62 | 58.82 |
| 2014 | 3.93 | 57.79 | 36.03 | 63.38 |
| 2015 | 4.16 | 56.33 | 32.40 | 63.97 |
| 2016 | 4.51 | 50.22 | 31.61 | 66.60 |
| 2017 | 8.01 | 46.24 | 29.32 | 68.35 |
| 2018 | 9.70 | 41.56 | 22.75 | 70.68 |

Source: Researchers' computation from Annual Reports of ALEX

**Descriptive Statistics**

Table 2 shows the summary of the descriptive statistics of the study variables. The table shows that ROCE, DEEQ, DECE and EQCE has mean of 4.699, 67.424, 36.841 and 60.567 respectively. The maximum values ROCE, DEEQ, DECE and EQCE are 9.700, 99.190, 49.800 and 70.680 while the minimum values are 2.800, 41.560, 22.750 and 50.200 respectfully. Table further shows that that the standard deviation of ROCE, DEEQ, DECE and EQCE are 2.285, 20.070, 8.199 and 7.051 respectively. This indicates that DEEQ is the most dispersed variable among the variables in the study, while DECE is the least dispersed among the variables. The Jarque-Bera statistics and the associated probability values show that the ROCE, DEEQ, DECE and EQCE are normally distributed with probabilities of 0.178, 0.662, 0.864 and 0.687 (which are greater than 5 per cent), respectively.

Table 2: Descriptive Statistics

| | **ROCE** | **DEEQ** | **DECE** | **EQCE** |
|---|---|---|---|---|
| Mean | 4.699000 | 67.42400 | 36.84100 | 60.56700 |
| Median | 3.875000 | 63.90500 | 36.32500 | 61.10000 |
| Maximum | 9.700000 | 99.19000 | 49.90000 | 70.68000 |
| Minimum | 2.800000 | 41.56000 | 22.75000 | 50.20000 |
| Std. Dev. | 2.285945 | 20.07063 | 8.199228 | 7.051378 |
| Skewness | 1.417142 | 0.269238 | -0.061883 | -0.053776 |
| Kurtosis | 3.497040 | 1.701973 | 2.173305 | 1.662621 |
| Jarque-Bera | 3.450088 | 0.822846 | 0.291143 | 0.750062 |
| Probability | 0.178165 | 0.662707 | 0.864528 | 0.687268 |
| Sum | 46.99000 | 674.2400 | 368.4100 | 605.6700 |
| Sum Sq. Dev. | 47.02989 | 3625.472 | 605.0461 | 447.4974 |
| Observations | 10 | 10 | 10 | 10 |

Source: E-views 9.0 output

Table 3: Multiple Regression Results
Dependent Variable: ROCE
Method: Least Squares
Date: 10/07/19 Time: 11:52
Sample: 2009 2018
Included observations: 10

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **C** | -98.89669 | 46.34474 | -2.133935 | 0.0768 |
| **DEEQ** | 0.500894 | 0.167202 | 2.995748 | 0.0241 |
| **DECE** | -0.304135 | 0.187693 | -1.620388 | 0.1563 |
| **EQCE** | 1.337825 | 0.539530 | 2.479611 | 0.0478 |

| | | | |
|---|---|---|---|
| R-squared | 0.892430 | Mean dependent var | 4.699000 |
| Adjusted R-squared | 0.838646 | S.D. dependent var | 2.285945 |
| S.E. of regression | 0.918240 | Akaike info criterion | 2.956458 |
| Sum squared resid | 5.058988 | Schwarz criterion | 3.077492 |
| Log likelihood | -10.78229 | Hannan-Quinn criter. | 2.823684 |
| F-statistic | 16.59261 | Durbin-Watson stat | 2.056920 |
| Prob.(F-statistic) | 0.002610 | | |

Source: E-views 9.0 Output

## DISCUSSION OF FINDINGS

Table 3 shows the results of the multiple regression analysis. From the results, the explanatory variables combined significantly explained changes in the dependent variable with probability of F-statistic value of 0.002610 (at 5% level of significance). Secondly, the coefficient of determination (R-squared) value of 0.89 indicates that 89% of changes in the dependent variable are accounted for by the combined effect of variations in the independent variables. Also, the adjusted R- squared value of 0.838646 indicates that the model used is a proper and good fit to be used in testing the hypotheses of the study. This provides a high confidence level for acceptance of the goodness of the study model. Furthermore, the Durbin- Watson statistics (2.05) is equal to the 2.0 benchmark, which indicates the non-existence of serial auto correlation among the independent variables.

Overall, the regression results used to verify the relationship between capital structures (DEEQ, DECE and EQCE) and firm performance (ROCE) indicated strong significant relationship between the explanatory variables and response variable. Consequently, the null hypotheses are rejected leading to the conclusion that capital structure does significantly affect firm performance.

**Test of Hypotheses**

DEEQ and ROCE
DEEQ has no significant effect on ROCE. From Table 3, the coefficient of DEEQ is 0.50 and the P-value is 0.02. This means that DEEQ has positive significant effect on ROCE (which means that it is statistically significant at 5% level). Therefore, the null hypothesis is rejected. This is in line with the findings of (Nimalathasan & Vateriu, 2010).

DECE and ROCE
DECE has no significant influence on ROCE. From Table 3 the coefficient of DECE is -0.30 with P-value of 0.15. This means DECE has negative influence on ROCE, but this is not statistically significant at 5% level. So the null hypothesis is accepted. This finding agrees with the study results of (Soumadi & Hayajnah, 2012; Ahmad, Abdullah & Roslan, 2012; and Huang & Song, 2006)

EQCE and ROCE
EQCE has no significant impact on ROCE. Table 3 shows that the coefficient of EQCE is 1.33 with P-value of 0.04. This means EQCE has a positive significant influence on ROCE, and this significant with P-value of 0.04 which approximately equal to 0.05. This means EQCE has a statistically significant impact on ROCE. Therefore the null hypothesis that EQCE has no significant impact on ROCE is rejected. This finding agree with the study results of (Sunday, 2015; and Saeedi & Mahmoodi, 2011).

## SUMMARY, CONCLUSION AND RECOMMENDATIONS

### Summary

This study was aimed at examining the link between capital structure and firm performance in Nigeria based on a case study of Aluminum Extrusion Company PLC, a company listed in the Nigerian Stock Exchange under the basic materials sector. Annual secondary data for the period 2009 to 2018 were collected through content analysis of the company's financial statements. The summary of the findings are as follow: Debt to equity ratio is positive and significantly related to return on capital employed; Equity to capital employ ratio is also positive and significantly associated with return on capital employed; and Debt to capital employed ratio has a negative insignificant linked with return on capital employed. Over all, capital structure has significant effect on firm performance based on the case study of Aluminum Extrusion Industry PLC, Nigeria.

## CONCLUSION

This study examined the link between capital structure and firm performance of basic material sector of Nigeria using Aluminum Extrusion Company PLC (ALEX) as a case study. The study adopted return on capital employed as proxy for firm performance (the response variable), while debt to equity ratio, equity to capital employed ratio and debt to capital employed ratio were the components of capital structure used as explanatory variables. Secondary data was generated from the annual reports of the company through content analysis for the period 2009 to 2018. The study employed descriptive statistics and multiple regression analysis based on the E-view 9.0 Software

as techniques for data analysis. The results revealed that capital structure had significant effect on the performance of ALEX, a company listed under basic materials sector of Nigeria.

**Recommendations**

Based on findings of the study the following recommendations are made;

(a) That firms in the basic material sector should finance their activity with retained earnings and use debt as the last option as this is in agreement with the perking Order theory, which states that there is hierarchy in choosing sources of funds.

(b) That the indirect effect of capital structure on firm performance be analyzed by future researchers.

(c) That managers of the company are advised to be extremely conscious in the use of debt financing as option in their capital mix up to the optimal limits, as debt to equity ratio provided positive significant effect on performance.

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