# F INANCIAL LEVERAGE AND FINANCIAL PERFORMANCE OF QUOTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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**Abstract:** This study examined the relationship between financial leverage and financial performance of quoted industrial goods firms in Nigeria for a thirteen (13) year period covering from 2008-2020. Specifically, this study ascertained the relationship between Debt-to-Equity Ratio, Short Term Debt Ratio, Long Term Debt Ratio and Cash Value Added. Panel data were used in this study, which were obtained from the annual reports and accounts of fourteen (14) sampled quoted industrial goods firms for the periods 2008-2020. *Ex-Post Facto* research design was employed. Inferential statistics using Pearson correlation coefficient, Multicollinearity test and Panel Least Square (PLS) regression analysis were applied to test the hypotheses of the study. The results revealed that Debt-to-Equity Ratio and Long Term Debt Ratio have a significant negative relationship with cash value added, while Short Term Debt Ratio significantly and positively relates with cash value added of quoted industrial goods firms in Nigeria at 5% level of significance. The study recommended amongst others that firms need to look more closely at the company's ability to pay its debt obligations, by managing the use of assets and cash flows to reduce the firm's risk of loss from not paying a liability on time. Well-managed assets and liabilities involve a process of matching offsetting items that can increase business profits.

**Keywords:** Debt-to-Equity Ratio, Short Term Debt Ratio, Long Term Debt Ratio, Cash Value Added

## Background to the Study

In this era of globalization and the most competitive business world, financing decisions play a significant role in sustaining profitability of the firms. The primary objective of every rational investor be it an institutional investor or individual investor, is to maximize expected returns on their investments within an acceptable level of risk. Thus, they prefer to invest their funds in shares of companies with increasing prices that will eventually boost their wealth in the stock market. Most investors prefer persistent increase in the value of their shares in the stock market in order to earn more return on their investments and maximize their wealth. Financial leverage is a measure of how much firm uses equity and debt to finance its assets. As debt increases, financial leverage increases. Financial leverage refers to application of debt financing and borrowed capital in an attempt to increase firm's operations and profitability (Will, 2021). A firm is considered leveraged when the firm is partially financed by both debt and equity. Most firms survive with a significant liquidity level which is mainly achievable through use of debt. Many companies use debt to leverage their profits and capital. This means companies are likely to use debt/leverage to increase assets which in turn increase production and profits.

Financial performance principally reflects business sector outcomes and results that shows overall financial health of the sector over a specific period of time. It indicates that how well an entity is utilizing its resources to maximize the shareholders wealth and profitability. Financial performance is an extent to which a company financial health over a period of time is measured (Ogbodo, Amahalu & Abiahu, 2017). It is a financial action used in order to generate higher sales, profitability and worth of a business entity for its shareholders through managing its current and non-current assets, financing, equity, revenues and expenses. Its main purpose is to provide complete information to shareholders and stakeholders to encourage them in making decisions. It can be used to evaluate similar companies from the same industry or to compare industries in aggregation. Managing risk and increasing profitability of a firm within the corporate governance compliance is an essence of making good decisions. In order to take timely decision, accurate information and proper analysis of the sector is necessary. It is against this backdrop, that this study sought to investigate the relationship between financial leverage and financial performance of quoted industrial goods firms in Nigeria.

    

## Statement of the Problem

The capital structure choice is a noteworthy managerial decision which impacts the risk and return of the shareholders. Apart from equity capital, companies also use debt capital to expand their business. Generally, having some amount of debt is considered good for the company, as employing only equity can be expensive for the company. By including debt in capital structure, firms can substantially reduce their cost of capital. However, financial leverage is associated with some challenges (Amahalu & Obi, 2020b). Therefore, it becomes important to know how industrial goods firms finance its operations as well as what it is paying back to its equity investors in the form of dividend to maximize long-term free cash flow, and manage its relationships with all of its stakeholders.

Prior studies have shown some kind of relation between financial leverage and financial performance, but the results have been inconsistent and mixed. There have been evidence that has shown a significant positive, a significant negative and no significant relationship between financial leverage and financial performance. For instance, Omabu, Okoye, Pius and Amahalu (2021), Khan, Qadeer, Mata, Chavaglia Neto, Sabir,Martins and Filipe (2021) found a positive relationship between financial leverage and financial performance. The second strand of literature documented a negative relationship between financial leverage and financial performance (for example, Senan, Ahmad, Anagreh , Tabash & Al-Homaidi, 2021). On the other hand, a non-significant relationship was reported between financial leverage and financial performance (Rahman, Abdelrhman,Nurul, Anwarul Islam, Rabbani & Bunagan, 2021). The inconclusive results and lack consensus by the reviewed literatures gave rise to a gap in literature which this study attempted to fill.

## Objectives of the Study

The main objective of this study is to ascertain the relationship between financial leverage and financial performance of quoted industrial goods firms in Nigeria. The specific objectives are to:

i.      Determine the extent of relationship between debt-to-equity ratio and cash value added of quoted industrial goods firms in Nigeria.
ii.     Ascertain the degree of relationship between short term debt ratio and cash value added of quoted industrial goods firms in Nigeria
iii.    Assess the magnitude of relationship between long term debt ratio and cash value added of quoted industrial goods firms in Nigeria.

## Research Hypotheses

The following null hypotheses were formulated to proffer solutions to the research questions:

$Ho_1$: There is no significant relationship between debt-to-equity ratio and cash value added of quoted industrial goods firms in Nigeria.
$Ho_2$: There is no significant relationship between short term debt ratio and cash value added of quoted industrial goods firms in Nigeria.
$Ho_3$: There is no significant relationship between long term debt ratio and cash value added quoted industrial goods firms in Nigeria.

## Conceptual Review

## Financial Leverage

Financial leverage is the use of borrowed money (debt) to finance the purchase of assets with the expectation that the income or capital gain from the new asset will exceed the cost of borrowing (Ezechukwu & Amahalu, 2017). Leverage is an investment strategy of using borrowed money, specifically, the use of various financial instruments or borrowed capital to increase the potential return of an investment. Leverage can also refer to the amount of debt a firm uses to finance assets. Leverage results from using borrowed capital as a funding source when investing to expand the firm's asset base and generate returns on risk capital. Financial leverage which is also known as leverage or trading on equity, refers to the use of debt to acquire additional assets (Hayes,

2021).Financial leverage is the use of <u>debt</u> to buy more <u>assets</u>. Leverage is employed to increase the <u>return on equity</u>. However, an excessive amount of financial leverage increases the risk of failure, since it becomes more difficult to repay debt.

**Debt-to-Equity Ratio**

The debt-to-equity ratio (D/E) is a <u>financial ratio</u> indicating the relative proportion of <u>shareholders' equity</u> and <u>debt</u> used to finance a company's assets (Okoye, Amahalu, Nweze & Obi, 2016). The Debt to Equity ratio is a <u>leverage ratio</u> that calculates the weight of total debt and financial liabilities against total <u>shareholders' equity</u>. The debt to equity ratio is a financial, liquidity ratio that compares a company's total debt to total equity. The debt to equity ratio shows the percentage of company financing that comes from creditors and investors. A higher debt to equity ratio indicates that more creditor financing (bank loans) is used than investor financing (shareholders).

**Short Term Debt Ratio**

Short-term debt, also called current liabilities, is a firm's financial obligations that are expected to be paid off within a year (Chad, 2021). Short-term debt is defined as debt obligations that are due to be paid either within the next 12-month period or the current fiscal year of a business. Short-term debts are also referred to as current liabilities. They can be seen in the liabilities portion of a company's statement of financial position (Amahalu, Okoye, Nweze & Okika, 2017).

$$\text{Short Term Debt Ratio} = \frac{\text{Short Term Debt}}{\text{Total Assets}}$$

**Long Term Debt Ratio**

Long Term Debt (LTD) is any amount of outstanding debt a company holds that has a maturity of 12 months or longer. It is classified as a non-current liability on the company's balance sheet. A debenture is a long-term debt instrument issued by corporations and governments to secure fresh funds or capital (Mbonu & Amahalu, 2021a). Long term debt is the debt taken by the company which gets due or is payable after the period of one year on the date of the balance sheet and it is shown in the liabilities side of the balance sheet of the company as the non-current liability.

$$\text{Long Term Debt Ratio} = \frac{\text{Long Term Debt}}{\text{Total Assets}}$$

**Financial Performance**

Financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate <u>revenues</u>. It is also used as a general measure of a firm's overall financial health over a given period. Financial performance is a complete evaluation of a company's overall standing in categories such as assets, liabilities, equity, expenses, revenue, and overall profitability. It is measured through various business-related formulas that allow users to calculate exact details regarding a company's potential effectiveness (Amahalu & Obi, 2020a). Financial performance refers to the degree to which financial objectives being or has been accomplished. It is the process of measuring the results of a firm's policies and operations in monetary terms. It is used to measure firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation.

Cash Value Added (CVA)

Cash value added (CVA) is a measure of a company's ability to generate cash flow above and beyond the required return to its investors. A high CVA indicates a company's ability to produce liquid profits from one financial period to another. Cash value added also can be the measure of company performance that looks at how much money a company generates through its operations. Generally, a high cash value added figure is beneficial for both companies and investors, as it demonstrates a company's ability to generate cash from one financial period to another, creating solid liquid profits (Tom-West, Okoye & Amahalu, 2021).

The cash value added metric is one way to measure the real profitability of a business, beyond what is required to pay the bills and satisfy the investors.

CVA = gross cash flow - economic depreciation - capital charge

Where:

- Economic depreciation is [WACC / (1+WACC)^n -1]
- Gross cash flow is adjusted profit + interest expense + depreciation
- The capital charge is the cost of capital x gross investment
- Gross investment is net current assets + historical initial cost

A value of more than 1.0 indicates that a company is profitable, while a value below 1.0 suggests it is failing to return a profit

**Debt-to-Equity Ratio and Financial Performance**

A lot of research has been conducted on leverage and its connection with firms' financial performance. The discoveries of these studies have however been contradictory. For instance, Akaji,Nwadialor, Agubata (2021) ; Mbonu, & Amahalu, (2021b) concluded that debt-equity financing has significant and positive effect on firms performance in Nigeria, while Ezejiofor, Nwakoby and Okoye (2019) found a negative relationship between between debt-to- equity ratio and earnings per share (EPS).

**Short Term Debt Ratio and Financial Performance**

DeMarzo and Zhiguo (2021) found that firms can make use of short-term financing which may influence profitability of the firm depending on the cost of the source of financing to that particular firm. Thomas and Zechner (2021) observed that firms may have a certain ration of short-term liabilities in its financing structure which they feel are optimum in enhancing performance and profitability. Kumar and Nanda (2020); Egolum, Amahalu and Obi (2019). observed that firms which had high short-term debt levels when compared to their long-term debt performed better than their peers.

**Long Term Debt Ratio and Financial Performance**

The behaviour of long-term debt is an important field of research. Okegbe, Eneh and Amahalu (2019) found that long-term finance is associated with higher productivity. Guo, Yang and Zhang (2020) shows that changes in leverage are positively related to changes in stock returns. Sutomo (2020) found that the firm with a higher asset diversification and a larger fixed asset ratio tends to use more long–term debt, while firms in regulated industries use more long-term debt.

**Theoretical Review**

**Agency Theory**

This work was anchored on the Agency Theory:

Agency theory was developed by Jensen and Meckling (1976). Agency relationship is defined as a situation where one party (principal) appoints another (agent) to perform services on their behalf and delegates decision making authority to them. The under-lying premise of this theory is that those individuals tasked with the representation of others should ultimately commit the corporate resources to value maximization for those they represent. Agency theory describes members of business management as agents who serve the interests of the shareholders. Agents increase the value of the owners' investment in return for which the owners reward the managers. Agency Theory explains how to best organize relationships in which one party determines the work while another party does the work.  In this relationship, the principal hires an agent to do the work, or to perform a task the principal is unable or unwilling to do.

**Empirical Review**

Rafiuddin and Rafiqul (2020) examined firm level characteristics and firm performance (or profitability) of service sector firms listed in the Australian Stock Exchange (ASX). Using a panel regression approach on data collected over an eleven-year period (2009–2019), the effect of capital structure and leverage was examined. Four measures of firm performance were used: return on assets, return on equity, operating margin ratio and return on capital employed. The analysis of data revealed a significant association between return on equity and leverage levels

Senan, Ahmad, Anagreh , Tabash  and Al-Homaidi, (2021) investigated the determinants of financial performance, firm liquidity and leverage ratio of Indian listed firms of Indian listed firms on the Bombay Stock Exchange. The study focused on balanced panel data for 1,333 Indian companies collected over a 12-year period from 2007 to 2018. The study used both static models (pooled, fixed and random effects) and the Generalized Moment Method (GMM). It is revealed that the current ratio and the quick ratio have a significant impact on the financial leverage of Indian listed firms.

Jim, Xiaochen and Chien (2021) investigated the relationship between long-term debt financing and financing deficit of Chinese-listed firms from 2003 to 2015. The study also assessed how ownership concentration, market timing, and state ownership affect the adoption of long-term debt financing when there is a financing deficit. The regression analysis documented a positive relationship between financing deficit and changes in the long-term debt ratio

**Methodology**

**Research Design**

*Ex-post facto* research design was adopted in this study.

**Population of the Study**

The population of this study consisted of all the sixteen (16) industrial goods firms quoted on the floor of Nigeria Stock Exchange as at 31st December, 2020. They include: Dangote Cement Plc; Beta Glass Plc; CAP Plc; Ashaka Cement Plc; Cement Company Northern Nigeria; Berger Paints; CutixPlc; First Aluminum Nigeria Plc; DN Meyer Plc; Premium Paints Plc; African Paints Nigeria Plc; Austin Laz& Company Plc; Avon Crowncaps& Containers Nigeria Plc; Portland Paints Plc; Greif Nigeria Plc and Wapco Nigeria Plc.

**Sample Size and Sampling Technique**

Purposively, the sample size of this study consisted of fourteen (14) quoted industrial goods firms that were continuously listed by Nigeria stock exchange during the period 1st January 2008 to 31 December 2020 and whose financial statements and reports are available and have been consistently submitted to Nigeria stock exchange for the period of study. They include: Dangote Cement Plc; Beta Glass Plc; CAP Plc; Ashaka Cement Plc; Berger Paints; Cutix Plc; First Aluminum Nigeria Plc; DN Meyer Plc; Premium Paints Plc; Austin Laz & Company Plc; Avon Crowncaps & Containers Nigeria Plc; Portland Paints Plc; Greif Nigeria Plc and Wapco Nigeria Plc.

**Source of Data**

This study basically utilised secondary data that were extracted from the annual reports and statements of account of the sample quoted industrial goods firms.

**Table 1: Variable Measurement**

| Variable | Acronym | Measurement |
|---|---|---|
| **Independent (Financial Leverage)** | | |
| Debt-Equity Ratio | DER | $\dfrac{\text{Total Liabilities}}{\text{Total Shareholders' Equity}}$ |

| Short Term Debt Ratio | STDR | $\dfrac{\text{Short Term Debt}}{\text{Total Debt}}$ | |
|---|---|---|---|
| Long Term Debt Ratio | LTDR | $\dfrac{\text{Long Term Debt}}{\text{Total Debt}}$ | |
| **Dependent Variable** | | | |
| Cash Value Added | CVA | Gross Cash Flow - Economic Depreciation - Capital Charge | |

## Model Specification

This study adapts and modified the model of Abubakar & Garba (2019) in determining the relationship between financial leverage and financial performance of quoted industrial goods firms in Nigeria:

$ROA = \beta_0 + \beta_1 \, LTDR + \beta_2 \, STDR + \mu$
The modified model used for the study is shown below as thus:
$CVA = \beta_0 + \beta_1 \, DER_{it} + \beta_2 \, STDR_{it} + \beta_3 \, LTDR_{it} + \mu_{it}$

**Where:**

$\beta_0$ = Constant term
$\beta_1 - \beta_3$ = Regression coefficient of the independent variable
$\mu_t$ = Error Term of firm $i$ in period t
$i$ =      individual  firms (1,2,3...14)
$t$ =      time periods (2008, 2009 ... 2020)
$CVA_{it}$ = Cash Value Added of firm $i$ in period t
$DER_{it}$ = Debt-to-Equity Ratio of firm $i$ in period t
$STDR_{it}$ = Short Term Ratio of firm $i$ in period t
$LTDR_{it}$ = Long  Term Ratio of firm $i$ in period t

## Data Presentation and Analysis

### Table 1: Pearson Correlation Matrix

| | CVA | DER | STDR | LTDR |
|---|---|---|---|---|
| CVA | 1.0000 | | | |
| DER | 0.2953 | 1.0000 | | |
| STDR | -0.1687 | 0.3888 | 1.0000 | |
| LTDR | -0.2870 | 0.2545 | 0.5822 | 1.0000 |

Source: E-Views 10.0 output, 2021
The Pearson correlation resultant output shows that there is a positive relationship between CVA and DER (0.2953). on the other hand, CVA negatively correlates with STDR (-0.1687) and LTDR (-0.2870).

### Table 2: Test of Multicollinearity

Variance Inflation Factors
Date: 11/19/21   Time: 13:47
Sample: 2008 2020
Included observations: 13

| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
|---|---|---|---|
| C | 0.000247 | 9.729711 | NA |

| | | | |
|---|---|---|---|
| DER | 1.03E-05 | 2.571326 | 1.179794 |
| STDR | 1.98E-05 | 15.34314 | 1.669122 |
| LTDR | 3.86E-06 | 9.256172 | 1.514863 |

Source: E-Views 10.0 output file, 2021

Table 2 shows that the variance inflation factors (VIF) for the study variables are less 10 respectively as revealed by the values of the Centered VIF. This is an indication of non existence of multicollinearity among the variables in the model

**Test of Hypotheses**

**Table 3: Panel Least Square Regression Analysis testing the relationship between DER, STDR, LTDR and CVA**

Dependent Variable: CVA
Method: Panel Least Squares
Date: 11/19/21   Time: 13:50
Sample: 2008 2020
Periods included: 13
Cross-sections included: 14
Total panel (balanced) observations: 182

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.149043 | 0.035704 | 4.174370 | 0.0000 |
| DER | -0.240209 | 0.089194 | -2.693097 | 0.0078 |
| STDR | 0.124954 | 0.026321 | 4.747238 | 0.0000 |
| LTDR | -0.169621 | 0.063447 | -2.673418 | 0.0082 |

| | | | |
|---|---|---|---|
| R-squared | 0.509148 | Mean dependent var | 0.136459 |
| Adjusted R-squared | 0.477551 | S.D. dependent var | 0.125188 |
| S.E. of regression | 0.125659 | Akaike info criterion | -1.288751 |
| Sum squared resid | 2.810670 | Schwarz criterion | -1.218333 |
| Log likelihood | 121.2763 | Hannan-Quinn criter. | -1.260204 |
| F-statistic | 13.47815 | Durbin-Watson stat | 1.593007 |
| Prob(F-statistic) | 0.000000 | | |

Source: E-Views 10.0 output file, 2021

**Interpretation of Regression Result**

Table 3 proves that the functional relationship between the dependent and independent variables is:

CVA = 0.149043 - 0.240209 DER + 0.124954 STDR - 0.169621 LTDR

The implication of the regression model is that a unit increase in DER and LTDR will cause CVA to reduce by 24% and 17% respectively, while a unit increase in STDR will exert 12% increase in CVA. The beta coefficient of the variables shows that; $\beta_1$ is -0.240209; $\beta_2$ = 0.124954; $\beta_3$ = -0.169621. The slope coefficients indicate that $X_1$ = 0.0078 < 0.05; $X_2$ = 0.0000 < 0.05; $X_3$ = 0.0082 < 0.05. This implies that DER and LTDR are negatively and significantly correlated with the CVA of quoted industrial goods firms in Nigeria. On the other hand, a positive

and significant relationship exists between STDR and CVA .As evident in table 4.4, the adjusted $R^2$ is 0.477551. This means that approximately 48% of the variations in the sampled firms' CVA can be explained jointly by DER, STDR and LTDR. The overall regression result with a P-Value = 0.000000 evidenced that DER, STDR and LTDR exhibit a significant relationship with CVA.

**Decision**

The regression result with P-value = 0.000000 provides a basis for accepting the alternative hypotheses, which states that Debt-to-Equity Ratio, Short Term Debt Ratio and Long Term Debt Ratio have a significant relationship with cash value added of quoted industrial goods firms in Nigeria at 5% level of significance.

**Findings, Conclusion and Recommendations**

**Findings**

Based on the analysis of this study, the following findings were deduced:

i. There is a significant but negative relationship between debt-to-equity ratio and cash value added of quoted industrial goods firms in Nigeria at 5% level of significance.

ii. There is a significant and positive relationship between short term debt ratio and cash value added of quoted industrial goods firms in Nigeria at 5% level of significance.

iii. There is a significant but negative relationship between long term debt ratio and cash value added quoted industrial goods firms in Nigeria at 5% level of significance

**Conclusion**

This study assessed the nexus between financial leverage and financial performance of quoted industrial goods firms in Nigeria for a thirteen (13) year period covering from 2008-2020. The independent variable (financial leverage) was proxied by Debt-to-Equity Ratio, Short Term Debt Ratio and Long Term Debt Ratio, while, the dependent variable (financial performance) was measured with Cash Value Added. The study obtained data from annual reports and account and publications of the industrial goods firms that operated during 2008-2020. With the aid of E-Views 10.0, Inferential Statistics using Pearson correlation coefficient, Multicollinearity test and Panel Least Square regression analysis were employed. This study revealed that Debt-to-Equity Ratio and Long Term Debt Ratio have a significant negative relationship with cash value added, while Short Term Debt Ratio significantly and positively relates with cash value added of quoted industrial goods firms in Nigeria at 5% level of significance. Conclusively, the study confirmed that a significant relationship exists between financial leverage and financial performance of quoted industrial goods firms in Nigeria.

**Recommendations**

On the premise of the study findings, the following recommendations were made:

a. In an attempt to reverse the negative relationship between debt-to-equity ratio and cash value added, firms need to look more closely at the company's ability to pay its debt obligations, by managing the use of assets and cash flows to reduce the firm's risk of loss from not paying a liability on time. Well-managed assets and liabilities involve a process of matching offsetting items that can increase business profits.

b. Considering the positive relationship between short term debt and cash value added, it is suggested that firms should continuously use short-term debt to ensure that cash is always available to satisfy the operating capital needs of a business.

    c.   In order to reverse the negative relationship between long term debt and cash value added, industrial goods firms should employ financing means that can improve the earnings per share, market capitalization and enhance the value of the firm for the benefit of its stakeholders.

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