Sapientia Global Journal of Arts, Humanities and Development Studies (SGOJAHDS), Vol.7 No.2 June, 2024; p.g. 253 – 269; ISSN: 2695-2319 (Print); ISSN: 2695-2327 (Online)

DEBT INDICES AND FINANCIAL PERFORMANCE OF OIL AND GAS FIRMS IN NIGERIA

OKETAH, FELIX OKECHUKWU, PROF. IFEOMA MARY OKWO, & DR. IKECHUKWU EZUGWU
Correspondence: felix.oketah@esut.edu.ng

Abstract

This study examined the effect of debt indices on financial performance of oil and gas companies in Nigeria. The specific objectives are to evaluate the effect of debt ratio (DR), debt to equity ratio (DER) and interest coverage ratio (ICR) on return on assets (ROA). The study anchored on the Trade-off theory and agency theory. Ex-post facto research design was adopted wherein secondary data sourced from audited financial statements of three (3) selected oil and gas companies (Total Nigeria Plc, 11 Nigeria Plc and Oando Nigeria Plc) listed on Nigerian Exchange Group. A period of 12 years (2010–2021) was used for the analysis. The results of the panel data regression analysis revealed that the predictor variables of DR had negative (-0.218419) and significant (0.0012) effect on ROA; DER had a negative (-0.001717) and nonsignificant (0.6430) effect on ROA; while ICR had a positive (1.85E-06) and nonsignificant (0.5160) effect on ROA of oil and gas companies in Nigeria. The implication of the finding is that a higher interest coverage ratio is associated with better financial performance in terms of ROA. The study concluded that among the explanatory variables examined only the interest coverage ratio had a positive effect on the financial performance of oil and gas companies in Nigeria. The adjusted R-squared (R2)of the study is 31%. The study recommended amongst other things that oil and gas companies should maintain a balance debt structure and avoid taking excessive debt that could strain their ability to generate profits. They should also aim at maintaining a healthy interest coverage ratio to ensure that they can comfortably meet interest payment obligation and avoid financial strain.

Keywords: Debt Indices, Financial Performance, Oil and Gas Companies, Debt Ratio, Debt to Equity Ratio, Interest Coverage Ratio, Return on Assets, Trade-off Theory, Agency Theory.

1. INTRODUCTION

1.1 Background of the Study

Debt financing involves utilizing borrowed funds for investment purposes to generate returns. According to Gatsi et al (2013), a company's adeptness in augmenting profits through debt leverage signifies the efficacy of its corporate governance. Effective debt management can showcase robust corporate governance and lead to improved company performance. When the returns on investments surpass the cost of financing, incorporating debt capital could heighten the profitability of equity capital (Abdul & Adelabu, 2015).

Debt indices serve as gauges for evaluating the extent of borrowed capital employed to support a company's ventures. It is imperative for both management and funding providers

to comprehend how an organization is financed, as an ill-suited financial mix could detrimentally impact a company's performance and sustainability (Enekwe et al, 2014). One of the primary advantages of debt financing lies in its tax-deductible interest charges, which ultimately lead to a lower capital cost (Krishnan & Moyer, 2006). Nonetheless, there are associated costs linked with debt financing, necessitating the careful design of a debt-equity combination to strike an equilibrium between equity and debt. Crafting a capital structure should aim to optimize shareholder wealth while approximating the most favorable capital structure possible.

A company's capital structure portrays how it secures its activities and expansion through an array of long-term financing sources, including common stock, preferred stock, retained earnings, and debentures, which generally have extended repayment periods. Among the various financing sources, gearing or leverage highlights the degree of external financing in a firm's capital structure. Essentially, it elucidates the risk associated with profit before interest and tax (PBIT) and the distribution of dividend income to shareholders, encompassing predetermined interest payments to creditors from company earnings. Gearing, or financial metrics such as debt ratio, debt-to-equity ratio, and interest coverage, appraise a company's capability to settle its obligations with its assets, the extent to which its operations are funded through debt and equity, and its ability to meet interest obligations on outstanding debt. Elevated debt levels indicate heightened gearing and bankruptcy vulnerability, potentially hindering future access to new lenders. Prudent management of debt indices can enhance shareholders' returns on investment (Jelinek, 2007). However, inadequately formulated and managed debt indices can precipitate substantial repercussions for a company's financial health and future prospects. Consequently, this study seeks to ascertain the extent to which debt indices like debt ratio, debt-to-equity, and interest coverage influence the financial performance of Nigerian oil and gas enterprises.

1.2 Statement of the Problem

Oil and gas enterprises operating in Nigeria confront a substantial challenge in reconciling shareholder expectations with the company's financial requirements. In pursuit of this equilibrium, management invests significant time in scrutinizing data to ascertain the optimal debt-to-equity ratio that aligns with the company's objectives and satisfies shareholder anticipations.

While numerous studies, including the Modigliani and Miller (M&M) proposition, propose that debt is a favorable avenue for financing due to the tax advantages associated with debt cost (interest), which maintains earnings per share and preserves equity stockholder count, the concept of gearing or leverage introduces financial risk. This risk pertains to the potential impact on earnings or dividend allocation to shareholders stemming from elevated gearing within the company's capital structure. Such a risk influences operating cash flow and shareholder earnings, encompassing both business and operational risk facets. Highly leveraged companies may grapple with going concern challenges that could potentially lead to bankruptcy.

Considering the aforementioned risk analysis, the introduction of debt heightens the demand of shareholders of Nigerian oil and gas firms for increase in return on equity (dividends) to offset the risks linked with external financing (secured creditors). These creditors require

timely interest payments, irrespective of annual profit or loss. This heightened dividend demand translates to elevated costs for the oil and gas firms subsequently affecting their retention strategies for future profit growth and prospects.

Inadequate debt management, stemming from ineffective policies concerning debt utilization, servicing, and oversight within Nigerian oil and gas companies, can lead to inherent business risk. Failing to meet financial obligations may result to financial distress, indicative of going concern uncertainties that could escalate to bankruptcy. Consequently, this research aims to investigate the influence of debt indices on the financial performance of oil and gas enterprises in Nigeria, while also offering insights into effective debt management strategies to enhance the financial performance of these aforementioned firms within the Nigerian context.

1.3 Objectives of the Study

The general objective of this study is to examine debt indices and financial performance of oil and gas companies in Nigeria. The specific objectives of the study are to:

i. Ascertain the effect of debt ratio on return on assets of oil and gas firms in Nigeria.
ii. Evaluate the effect of debt-to-equity ratio on return on assets of oil and gas firms in Nigeria.
iii. Determine the effect of interest coverage ratio on return on assets of oil and gas firms in Nigeria.

2. REVIEW OF RELATED LITERATURE

2.1.1 Debt Indices

Debt financing encompasses the process by which a company generates capital by issuing debt instruments, such as bonds or debentures, to investors. This financial strategy involves selling these debt instruments to individuals and institutional investors, thereby raising funds for operational needs or capital investments. In exchange for lending the money, these investors become creditors and receive the assurance of repayment of both the principal amount and interest on the debt (Investopedia, 2020).

A debt refers to a borrowed sum of money obtained by one party from another. Debt is commonly employed by businesses and individuals to facilitate significant purchases that might otherwise be unattainable through normal means. A debt arrangement enables the borrowing party to access funds with the agreement to repay the borrowed amount at a later date, often accompanied by interest. Debt financing is typically categorized into three main types: Short-Term (Secured/Unsecured) Loans, which are usually settled within 6 to 12 months; Intermediate-Term (Secured/Unsecured) Loans, with repayment typically occurring within three years; and Long-Term (Secured/Unsecured) Loans, which are generally repaid within a span of 5 years. Conversely, debt indices encompass various factors and variables that signify the proportion of debt within a company's financial structure, spanning both short and long-term contexts.

2.1.2 Debt Ratio

The debt ratio serves as a financial metric designed to assess the extent of leverage within a company. This ratio is calculated by dividing the total debt of a company by its total assets, expressed either as a decimal or percentage. It operates as a solvency ratio, gauging the proportion of a company's total liabilities relative to its overall assets. Through the debt ratio,

one can glean insights into a company's capability to settle its obligations utilizing its asset base, thereby shedding light on its financial leverage. If the ratio surpasses one, it signifies that a substantial portion of the debt is financed through the company's assets, implying a situation where liabilities exceed assets. Such a higher ratio also suggests that the company might be exposed to the risk of defaulting on its debt if interest rates experience rapid escalation. Conversely, a ratio less than one indicates that a larger share of the company's assets is backed by equity, underscoring a more secure financial position (Investopedia, 2019). In essence, the debt ratio is determined by dividing total liabilities or total debt by the company's total assets.

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

2.1.3 Debt to Equity Ratio

The ratio of debt to equity characterizes the extent to which a company funds its operations through debt in comparison to internally owned capital. This pivotal metric in the realm of corporate finance plays a crucial role in assessing a company's financial leverage. In more precise terms, it signifies the potential of shareholder equity to meet all prevailing obligations should the company encounter a downturn. Termed as the Debt-to-Equity ratio, this metric, also referred to as the "debt-equity ratio," "risk ratio," or "gearing," functions as a leverage ratio, juxtaposing the entirety of debt and financial commitments with the aggregate of shareholders' equity. Its purpose is to delineate whether a company's financial structure leans towards debt or equity financing (Corporate Finance Institute, 2020).

The debt-to-equity ratio operates as a liquidity metric within the financial domain, serving to compare a company's total debt against its overall equity. A higher debt-to-equity ratio indicates a heavier reliance on creditor financing, such as bank loans, as opposed to investor financing, which involves shareholders. To compute the debt-to-equity ratio, the total liabilities or total debt of the company is divided by its total shareholders' equity.

$$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Shareholders'Equity}}$$

2.1.4 Interest Coverage Ratio

The interest coverage ratio, also recognized as the times interest earned ratio, is a debt metric utilized to assess a company's capacity to meet its interest obligations on existing debt. This ratio is computed by dividing a company's earnings before interest and taxes (EBIT) by its interest expenses over a specific timeframe, in relation to the corresponding interest payments due for that identical period.

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings before Interest and Taxes}}{\text{Interest Expense}}$$

2.1.3 Financial Performance

The term 'Performance' originates from the Greek word 'Parfourmen,' which conveys the notions of accomplishment, execution, fulfillment, and execution. It denotes the act of carrying out tasks, achieving objectives, and meeting satisfactory standards. In a broader context, performance encompasses the achievement of a specific task evaluated against contemporary benchmarks of accuracy, completeness, cost-effectiveness, and speed. In simpler terms, it quantifies the extent to which a task has been completed or is being carried out (Enekwe et al, 2015). Financial performance involves a subjective assessment of how effectively a company leverages its core business operations to generate increased revenues. All businesses

incorporate financial performance metrics as part of their performance evaluation, although there's ongoing debate about the relative importance of financial versus non-financial indicators. Evaluating a company's financial performance aids decision-makers in objectively gauging the outcomes of business strategies and initiatives in monetary terms. Growth is often perceived as a success indicator, provided it translates into enhancements in financial performance (Brealy et al, 2007).

Financial performance pertains to the process of appraising a company's outcomes, policies, and activities in monetary units. It serves as an indicator of a firm's achievements, conditions, and adherence to standards. The concept is employed to gauge a firm's overall financial well-being within a specific timeframe, reflecting its position and the efficiency with which assets are employed to generate additional revenue and expand operations (Copisarow, 2000). Various methods are employed to gauge financial performance. These encompass revenue from operational activities, total units sold, market share, return on assets, return on equity, net profit margin, earnings per share, net operating profit after tax, asset turnover, and operating income. Within the scope of this study, return on assets is chosen as a proxy for financial performance. This ratio is utilized because it is a pivotal measure of profitability, assessing the amount of profit generated by a firm for each unit of its assets.

2.1.4 Return on Assets

This financial metric is a ratio that indicates the proportion of earnings a company generates in relation to its entire pool of resources, represented by its total assets. Functioning as a measure of profitability, this ratio assesses the net income generated by the total assets over a specific timeframe, achieved by comparing the net income against the average total assets. In essence, the return on assets ratio, commonly referred to as ROA, serves as a gauge of the company's efficacy in utilizing its assets to generate profits within a given period.

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

Where; Net income = Profit for the year

This metric indicates the comparative profitability of the business. A heightened return on assets ratio is more advantageous for investors, as it signifies that the company is adeptly harnessing its assets to generate larger net income amounts. The Return on Assets (ROA) ratio evaluates the efficiency with which a company is able to yield returns from its investment in assets. In simpler terms, ROA reflects the company's skill in converting the funds used to acquire assets into net income or profits. Thus, a higher ROA corresponds to greater overall profitability for the firm. Additionally, ROA serves as an indicator of managerial competence, revealing how effectively the company's management has translated the assets within its control into earnings (Falope & Ajilore, 2009).

2.2 Theoretical Framework

The theories which are considered to underpin this study include the Trade-off Theory and Agency Theory.

2.2.1 Trade-off Theory

Trade-off theory is a financial theory based on the work of economists Modigliani and Miller in the 1950s. The trade-off theory claims that companies should aim to find the optimal level

of financial leverage. Optimal level of financial leverage means that the gains and costs of financial leverage is balanced (Myers, 1984). The original version of the trade-off theory grew out of the debate over the Modigliani miller theories when corporate income tax was added to the original irrelevance, this created a tax shield benefit for debt. According to the trade-off theory, most firms try to balance between the tax advantage on the use of leverage against the costs associated with utilization of leverage as a financing means of investments in a firm (Aliu, 2010). However, trade-off theory explains that companies usually borrow from financial institutions in a gradually manner so as to reach its optimal level of debt-equity ratio. At this level, firms are able to maximize market value in summing up present valve of expected debt financing cost against expected benefits of debt financing.

2.2.2 Agency Theory

Jensen and Meckling (1976) defined agency relationship as a contract under which one or more persons (the principal) engage another person (the agent) to perform some services on their behalf which involves delegating some decision-making authority to the agent (Oliver, 2016). The issue of agency arises immediately when the desires and the goals of the principal and the agent issues with the aim of ensuring a better relationship between them. More so, the Jensen and Meckling (1976) agency theory explains that decisions on capital structure must aim at reducing the cost related to agency by reducing equity in capital structure. This is done by increasing the debt financing hence increasing the market value of the firm as well as reducing the conflicts that may exist between manager of a firm and shareholders.

However, the agency theory suggests that debt is used as a tool to control the manager since with debt financing; managers will be forced to focus on using the free cash flows to service the debt other than trying to invest the funds in some profitable projects (Calabrese, 2011). Thus, the theory of agency supports the use of debt to improve the firm's financial performance (Mwangi et al, 2016).

In summary, the study adopts the two theories as its framework because Trade-off theory emphasizes the aim of a firm to find the optimal level of debt indices that would be positively relevant to the financial performance. On the other hand, Agency theory supports the use of debt to improve the firm's financial performance. It suggests the need to use only debt for continuous funding of a business rather than issuing further equity and causing harm to the earnings available to the equity stock holders.

2.3 Empirical Review

Vintilă and Duca (2012) investigated The Impact of Financial Leverage to Profitability Study of Companies Listed in Bucharest Stock Exchange. Their study examined the relationship between return on equity (ROE), leverage, size of firms and total assets turnover. Data from companies registered under Bucharest Stock Exchange were used for analysis. Results of the regression analysis indicated that high debt level causes significant positive impact on ROE. Their study concluded that many companies use debt to leverage their capital and profit but important to note that debt is not the only factor that used to leverage capital and profit.

Enekwe et al (2014) explored the effects of financial leverage on financial performance of Nigeria Pharmaceutical Companies. The data for the study were extracted from the annual reports and accounts of three pharmaceutical companies from 2001 to 2012. The results of the

correlation and regression analysis revealed that debt to equity ratio, debt ratio and interest coverage ratio had insignificant impact on profitability of the pharmaceutical industry in Nigeria.

Enekwe (2015) investigated the relationship between financial ratio analysis and corporate profitability of some selected quoted oil and gas companies in Nigeria. The results of the Pearson correlation and regressions of the analysis showed that interest coverage has positive relationship and statistically significant with corporate profitability in the Nigerian oil and gas industry.

Mule and Mukras (2015) investigated the Relationship between Financial Leverage and Financial Performance of Listed Kenyan Firms. The study used annual data for a 5 years period starting from the year 2007 to 2011. The results of the panel data analysis found strong evidence that financial leverage significantly and negatively affects the performance measured using ROA. Ismail (2016) studied the effect of financial leverage on financial performance of non- financial firms listed on the Nairobi Securities Exchange. Data were extracted from the annual audited financial statements of non-financial companies listed at NGX for a period of 5 years between 2011 and 2015. The results of multiple linear regression analysis found that financial leverage had a significant negative relationship with financial performance while firm size had positive and insignificant relationship with financial performance.

Nawaz et al (2015) evaluated the impact of financial leverage on firms' profitability: An Investigation from Cement Sector of Pakistan. This research is an attempt to establish a stochastic relationship between Financial leverage and Profitability of cement sector operating in Pakistan. Data for the study were sourced from annual reports of selected 18 cement manufacturers for six years period (2005 to 2010). Results of the Ordinary Least Square model revealed that financial leverage has a statistically significant inverse impact on profitability at 99% confidence interval.

Ilyukhin (2015) investigated the impact of financial leverage on firm performance: Evidence from Russia. Firm debt to total assets was used as proxy of financial leverage measure while return on assets, return on equity and operating margin were employed as firm performance measures. The results for a large sample of Russian joint-stock companies over the period 2004-2013 years showed that the impact of financial leverage on Russian firms' performance has been negative.

Denugba et al, (2016) investigated Financial Leverage and Firms' Value: A Study of Selected Firms in Nigeria. Data were collected from the annual reports and accounts of five selected firms listed on Nigerian Exchange Group for a period of 6 years (2007-2012). The results of the Ordinary Least Square (OLS) analysis revealed that there was significant relationship between financial leverage and firms' value. Also, that financial leverage had significant effect on firms' value. Their study concluded that financial leverage is a better source of finance than equity to firms when there is need to finance long-term projects.

Karimi and Kheiri (2017) evaluated a study on the impact of financial structure, financial leverage and profitability on companies' shares value (A Study Case: Tehran Stock Exchange

Listed Companies, Iran). Data for the study were collected from official documents on Tehran's stock exchange from 2010 and 2014. Results of the analysis revealed that the variable of financial structure has no statistically significant effects on company's value. Also, results showed that there is a positive relationship between financial leverage and profitability on company's value.

Nhung (2017) investigated the impact of financial leverage on firm performance: A Case Study of Listed Oil and Gas Companies in England. Data for the study was drawn from financial statements of 18 British Gas and Oil companies from 2009 to 2014. The result revealed that there were strong negative impacts of financial leverage measured by LTD and TD on performances of ROA and ROE, while STD had insignificant effects on ROA and ROE of these firms.

Nwanna and Ivie (2017) evaluated effect of financial leverage on firm's performance: A Study of Nigerian Banks (2006 - 2015). Financial leverage was decomposed into debt ratio, debt-equity ratio and interest coverage ratio while profitability, size, liquidity, efficiency and market capitalization value were used to measure performance. Data for the study were drawn from annual reports of selected companies. The results of the multiple regression analysis revealed that financial leverage has positive effect on profitability and efficiency while no significant effects were found on liquidity, size and market capitalisation value.

Iqbal and Usman (2018) evaluated the impact of financial leverage on firm performance. Data from top 16 companies in Pakistan Textile industry from 2011-2015 were used for the study. The results of the descriptive statistics, correlation analysis and regression model showed that financial leverage has negative and significant effect on firm ROE and financial leverage has positive and significant effect on firm ROA. Their study also indicated that the high interest rate and more amount of debt decreases the value of equity and has negative impact on firm performance. On the other hand, the amount of debt has positive impact on firm ROA. Their study concluded that financial leverage has positive impact on firm performance if the amount of debts do not exceed from the amount of equity.

Ahmadu (2020) studied financial leverage and financial performance of oil and gas companies in Nigeria. Regression Analysis was used for the study. The results revealed that short term debt ratio and long term debt ratio have no significant effect on the financial performance and total debt ratio has a negative significant effect on the financial performance denoted by return on equity.

Osamor (2020) studied financial stability and firm's performance of selected oil and gas firms in Nigeria. The result of the regression analysis unveiled that financial stability ratios have no effects on firm's performance while financial risk ratios have effects on firm's performance in oil and gas firms.

Obumneme (2022) examined the impact of Capital Structure on Financial performance of oil and gas firms in Nigeria. The finding of the regression analysis revealed that long term debt to total assets has a negative significant influence on return on asset whereas short term debt to total debt and total debt and total debt to total equity had positive insignificant impacts.

2.5 Gap in Empirical literature

From the related literatures reviewed it can be observed that majority of existing studies were conducted on manufacturing sector, neglecting other sectors of the economy such as Pharmaceutical sector, Oil and Gas sector in Nigeria. This is a gap in this research.

More so, some of the studies on debt ratio, debt and equity ratio above were conducted outside Nigeria. For instance, Muhammad (2018) and Iqbal & Usman (2018) carried out their works in Pakistan whereas Nanteza(2017) conducted his work in Kenya. This has also created a geographical gap in the research.

Among the works carried out on debt indices and financial performance of oil and gas companies, emphasis is not so much paid on interest coverage ratio and financial performance. A variable gap is thus created in the research. Finally, majority of the research were done before year 2022. Thus, making this work carried out in 2023 most recent and up to date.

This research therefore on debt indices and financial performance of oil and gas sector in Nigeria intends to fill the gaps.

3. METHODOLOGY

3.1 Research Design

The research methodology employed in this study is ex-post facto, a systematic approach that addresses research questions using existing data. The primary focus of the study is on Nigeria, utilizing data from the nation's oil and gas companies, specifically emphasizing 11 companies listed on the Nigeria Exchange Group as of January 2022.

Predominantly sourced from publicly available audited financial statements of the selected oil and gas companies listed on the Nigerian Exchange Group, secondary data was utilized for this study. The data spanned a 12-year period (2010-2022), ensuring an adequate number of observations per variable to ensure the credibility of the regression analysis results. The study's timeframe commenced in 2010 and concluded in 2021, with the exclusion of the year 2022 due to the customary practice of finalizing accounting by oil and gas companies in December.

The study's target population consisted of the 11 oil and gas firms listed on the Nigeria Exchange Group in 2022. However, the sample size comprised three specific companies: Total Nigeria Plc, 11 Nigeria Plc, and Oando Nigeria Plc. These companies were deliberately chosen based on considerations of data availability and performance.

3.2 Method of Data Analysis

The multiple regression technique was used to analyze the variables. Regression analysis was conducted to ascertain the effect of these explanatory variables (Debt ratio, Debt -to- Equity Ratio and Interest Coverage Ratio) on return on assets. Decisions were reached on a 5% level of significance. Preliminary test such as descriptive statistics were also performed. It was used to test the normality of the distribution of the data series.

3.3 Model Specification

The model is specified as follows: $ROA_t = \beta o + \beta 1DR_t + \beta 2DER_t + \beta 3ICR_t + \varepsilon t$ –(Equation (1)

Where: ROA = Return on Assets

DR = Debt Ratio

DER = Debt to Equity Ratio

ICR = Interest Coverage Ratio

ε = Stochastic Disturbance (Error) Term

βo = Coefficient (constant) to be estimated

$\beta 1 - \beta 3$ = Parameters of the independent variables to be estimated

t = Current period

3.4 Description of Variables

For the purpose of the analysis, the variables of the study were organized and structured into independent and dependent variables. Financial performance which is the dependent variable was measured by return on assets while the independent variable (debt indices) was measured by debt ratio, debt-to-equity ratio and interest coverage ratio.

Table 3.7.1: Model Variables Description

Variables	Description/Measurement
ROA = Return on Assets	This shows the percentage of how profitable a company's assets are being utilized in generating revenue. ROA = $\frac{\text{Profit for the year}}{\text{Total Assets}}$
DR = Debt Ratio	The debt ratio measures the relative amount of a company's assets that are provided from debt. DR = $\frac{\textbf{Total Debt}}{\textbf{Total Assets}}$
DER = Debt-to-Equity Ratio	The debt-to-equity ratio calculates the weight of total debt and financial liabilities against shareholders' equity. DER = $\frac{\text{Total Debt}}{\text{Shareholders' Equity}}$
ICR = Interest Coverage Ratio	The interest coverage ratio shows how easily a company can pay its interest expenses. ICR = $\frac{\text{Operating Income/EBIT}}{\text{Interest Expenses}}$

Source: Author's Arrangement, 2023.

4. DATA ANALYSIS

Table 4.1: Descriptive Statistics of the Industry Level

	ROA	DR	DER	ICR
Mean	0.019236	0.836626	2.607067	1141.694
Median	0.058642	0.792204	2.955631	6.475802
Maximum	0.151623	2.015828	15.91316	402.7211
Minimum	-0.368402	0.522044	-21.35047	-2.464140
Std. Dev.	0.116349	0.316736	5.288390	6708.326
Skewness	-1.017900	0.951299	-1.258580	0.946361

Kurtosis	3.214057	2.42997	2.80358	3.012343
Jarque-Bera	24.52409	126.9136	205.6833	1641.804
Probability	0.105365	0.083100	0.123000	0.001000
Sum	0.692478	30.11855	93.85443	41100.98
Sum Sq. Dev.	0.473794	3.511263	978.8475	1.58E+09
Observations	36	36	36	36

Source: Author's Computation, 2023 (Eviews 10.0 Statistical Software)

Table 4.1 presents the variable description of the 36 observations for the panel data of the sampled oil and gas companies. The normality of the data distribution is assessed through the skewness, kurtosis, and Jarque-Bera Probability coefficients. The results indicate that the variables, except for ICR, exhibit statistically insignificant p-values (greater than 0.05) for the Jarque-Bera Statistics. This suggests that the variables follow a normal distribution.

The skewness coefficients further supported this finding, as they have values less than or approximately equal to 1. Skewness measures the asymmetry of the data distribution, and the fact that the coefficients are within an acceptable range indicates a relatively symmetrical distribution for the variables. Additionally, the kurtosis coefficient provided further confirmation of the normal distribution, as all variables have coefficients below or around 3. Kurtosis measures the degree of peakedness or flatness of a distribution, and values close to 3 indicate a normal distribution. Overall, the results from the coefficients of skewness, kurtosis, and Jarque-Bera Probability suggest that the variables in the panel data for the oil and gas companies are normally distributed, providing confidence in the data's suitability for subsequent analyses.

Table 4.2: Regression Analysis of the Industry Level

Dependent Variable: ROA
Method: Panel EGLS (Period random effects)
Date: 05/21/23 Time: 22:54
Sample: 2010 2021
Periods included: 12
Cross-sections included: 3
Total panel (balanced) observations: 36
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.204337	0.058208	3.510442	0.0014
DR	-0.218419	0.061556	-3.548297	0.0012
DER	-0.001717	0.003669	-0.467976	0.6430
ICR	1.85E-06	2.81E-06	0.656869	0.5160
	Effects Specification			
			S.D.	Rho
Period random			0.000000	0.0000
Idiosyncratic random			0.110916	1.0000

	Weighted Statistics		
R-squared	0.360950	Mean dependent var	0.019236
Adjusted R-squared	0.311039	S.D. dependent var	0.116349
S.E. of regression	0.097272	Sum squared resid	0.302778
F-statistic	6.024771	Durbin-Watson stat	0.653731
Prob(F-statistic)	0.002254		

Source: Author's Computation, 2023 (Eviews 10.0 Statistical Software)

Table 4.2 presents the outcomes concerning the impacts of Debt Ratio, Debt to Equity ratio, and Interest Coverage on Return on Assets (ROA). The findings reveal that Debt Ratio has a noteworthy and adverse influence on ROA, implying that an elevation in the Debt Ratio corresponds to a decline in ROA. Nevertheless, the Debt to Equity ratio exerts an unfavorable influence on ROA that lacks statistical significance. Similarly, although Interest Coverage has a favorable influence on ROA, it also lacks statistical significance. Furthermore, as indicated in Table 4.1.2b, a unit rise in Debt Ratio and Debt-to-Equity Ratio results in a 0.21% decrease and a -0.002% decrease, respectively, in return on assets for oil and gas firms in Nigeria. Conversely, a unit rise in Interest Coverage Ratio corresponds to a minute increase of 0.000001% in return on assets within the industry.

The adjusted R-squared value, approximately 31%, suggests that the explanatory variables (DR, DER, and IC) account for around 31% of the variations observed in ROA. The remaining 69% of the variations could be attributed to other factors influencing ROA in the industry, as well as factors captured by the error terms. The probability associated with the F-statistics being significant (0.002254) denotes the statistical appropriateness of the multiple regression model and the overall outcomes. The Durbin-Watson statistic gauges the presence of autocorrelation in the data. A value below 2 signifies positive autocorrelation, above 2 signifies negative autocorrelation, and a value of 2 indicates the absence of serial autocorrelation. In this instance, the Durbin-Watson statistic of 0.653731 indicates the presence of positive serial autocorrelation in the panel data derived from the annual reports and accounts of the sampled consumer goods firms.

4.3 Test of Hypotheses

Decision Rule: Reject null hypothesis (Ho) if the P-value tabulated is less than the A-value of 0.05 and t-statistic presented is above A –value of 2. Otherwise, accept the null hypothesis.

4.3.1 Hypothesis One

Ho: Debt ratio has a nonsignificant effect on return on assets of oil and gas companies in Nigeria

Hi: Debt ratio has a significant effect on return on assets of oil and gas companies in Nigeria

Decision: From the panel data regression analysis in table 4.2. The P-value of 0.0012 is less than A-value of 0.05 and t-statistics value of 3.55 is above 2. Therefore, the alternate hypothesis is accepted and the null hypothesis rejected. This implies that debt ratio has a significant effect on return on asset of oil and gas companies in Nigeria.

4.3.2 Hypothesis Two

Ho: Debt to equity ratio has no significant effect on return on asset of oil and gas companies in Nigeria

Hi: Debt to equity ratio has a significant effect on return on asset of oil and gas companies in Nigeria

Decision: From the panel data regression analysis in table 4.2. The P-value of 0.6430 is greater than 0.05 A-value whereas the t-statistic value of 0.5 is below 2. Therefore, the null hypothesis is accepted and the alternate hypothesis rejected. This implies that debt to equity ratio has no significant effect on return on asset of oil and gas companies in Nigeria.

4.3.3 Hypothesis three

Ho: Interest coverage ratio has no significant effect on return on asset of oil and gas companies in Nigeria.

Hi: Interest coverage ratio has a significant effect on return on asset of oil and gas companies in Nigeria.

Decision: From the panel data regression analysis in table 4.2. The P-value of 0.5160 is greater than 0.05 A-value and t-statistic value of 0.7 is below 2. Therefore, the null hypothesis is accepted and the alternate hypothesis rejected. This implies that interest coverage ratio has no significant effect on return on asset of oil and gas companies in Nigeria.

4.4 Discussion of Findings

4.4.1 Debt Ratio and Return on Asset

The outcome of the panel multiple regression analysis offers valuable insights into the correlation between the debt ratio and the return on assets (ROA) within Nigeria's oil and gas firms. The results reveal a substantial and adverse impact of the debt ratio on these companies' ROA. This outcome implies that as the debt ratio climbs, the ROA of oil and gas enterprises tends to diminish. This suggests that heightened levels of debt in relation to the total assets of the company negatively influence both the returns achieved from asset utilization and the returns allocated to shareholders. With an elevated debt ratio, companies need to apportion a considerable portion of their earnings towards interest payments, which in turn diminishes the overall returns generated from their assets. This discovery corroborates earlier research conducted by Maghanga (2015) and Ismail (2016), which uphold the idea that an elevated debt ratio typically has an adverse impact on a company's ROA. Nonetheless, this finding contradicts the conclusions drawn by Vintila and Duca (2012), who may have arrived at a different outcome due to variations in analytical methodologies, approaches, or sample selections employed.

4.4.2 Debt to Equity Ratio and Return on Asset

The results indicated that the debt to equity ratio exhibits a negative and statistically insignificant influence on the return on assets. This implies that an increased proportion of debt in relation to equity has an adverse impact on both profitability and operational efficiency. Elevated debt levels give rise to higher interest obligations, subsequently diminishing profitability and overall returns derived from asset utilization. This holds notable implications for oil and gas firms possessing higher debt to equity ratios, as they would incur

heightened expenses due to interest payments, consequently leading to reduced profitability. This underscores the importance of maintaining a well-balanced capital structure to ensure sustainable growth and profitability. Overreliance on debt-based financing could yield unfavorable repercussions on both profitability and asset utilization. These findings align with prior research conducted by Rehman (2013), Nanteza (2017), Muhammad (2018), and Nhung (2017), which similarly identified a negative and insignificant correlation between the debt to equity ratio and return on assets (ROA). Conversely, the outcomes from Gweyi and Karaja (2014) as well as Denugba, Ige, and Kesino (2016) diverge from the present study, as they demonstrated a positive and significant connection between the debt to equity ratio and ROA.

4.4.3 Interest Coverage Ratio and Return on Asset

The outcomes indicate that the Interest Coverage Ratio (ICR) exhibits a positive but statistically insignificant impact on the return on assets (ROA) within Nigerian oil and gas firms. This suggests a tendency for the interest coverage ratio to rise concomitantly with an increase in the return on assets, and vice versa. Put differently, as oil and gas companies achieve elevated returns on their assets, their capacity to cover interest expenses also tends to enhance. A heightened interest coverage ratio reflects the company's ability to generate ample profits for covering interest payments. Within the oil and gas sector, marked by substantial capital investments, a higher return on assets signifies more efficient utilization of the company's resources and a heightened capacity to generate profits. Consequently, this culminates in an elevated interest coverage ratio as the company possesses greater funds to meet its interest obligations. Conversely, diminished returns stemming from the company's assets pose challenges in covering interest expenses. This situation could arise from factors like declining oil and gas prices, operational inefficiencies, or economic downturns. Under such circumstances, the interest coverage ratio tends to decline due to the company's compromised profitability and its reduced ability to generate ample profits for covering interest payments. The findings of Enekwe Agu and Eziedo (2014), Kariri and Kheri, Nwanna and Irie (2017), Enekwe (2015) corroborate the results concerning the positive influence of interest coverage on return on assets. These studies underscore that a higher interest coverage ratio generally aligns with improved financial performance and profitability within the oil and gas industry.

5. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The findings are summarized as follows:

1. Debt ratio has a negative (-0.218419) and significant (P-value 0.0012) effect on return on asset of oil and gas companies in Nigeria.
2. Debt to equity ratio has a negative (-0.001717) and nonsignificant (P-value 0.6430) effect on return on asset of oil and gas companies in Nigeria.
3. Interest Coverage ratio has a positive (01.85E-06) and nonsignificant (P-value 0.5160) effect on return on asset of oil and gas companies in Nigeria.

5.2 Conclusion

The primary objective of the study was to explore the correlation between debt indices and the financial performance of oil and gas firms in Nigeria. The systematic collection and

scientific analysis of data yielded significant insights. Firstly, the analysis revealed a noteworthy and adverse impact of the debt ratio on return on assets (ROA). Secondly, although the debt to equity ratio displayed a negative effect on ROA, this influence did not achieve statistical significance. Lastly, the interest coverage ratio exhibited a positive effect on ROA, yet this effect was not statistically significant.

The adjusted R-squared value demonstrated that around 31% of the variations observed in ROA could be attributed to the debt ratio, debt to equity ratio, and interest coverage ratio. This suggests that these variables moderately contribute to the financial performance of oil and gas enterprises in Nigeria. Based on these conclusions, the study inferred that among the variables under scrutiny, solely the interest coverage ratio exhibited a positive impact on the financial performance of Nigerian oil and gas companies. This implies that a heightened interest coverage ratio corresponds to enhanced financial performance in terms of ROA.

5.3 Recommendations

The subsequent recommendations were formulated based on the research findings:

i. As the study demonstrated a noteworthy adverse influence of the debt ratio on return on assets (ROA), it is prudent for oil and gas enterprises to exercise careful control over their debt levels. Excessive debt has the potential to contribute to decreased ROA, thus detrimentally affecting financial performance. It is advisable for companies to uphold a well-balanced debt structure and refrain from taking on excessive debt that could potentially strain their capacity to generate profits.

ii. Despite the absence of a statistically significant correlation between the debt to equity ratio and ROA as revealed by the study, oil and gas firms should not overlook this ratio when making financing choices. The debt to equity ratio delineates the extent of debt in relation to equity within the company's capital framework. While the direct impact on ROA may not be pronounced, maintaining a sensible equilibrium between debt and equity remains imperative to ensure financial stability and risk mitigation.

iii. The management of oil and gas companies should exercise diligent oversight of their interest coverage ratio. A heightened interest coverage ratio signifies the company's ability to cover interest obligations with its earnings. Companies should aim to sustain a robust interest coverage ratio, ensuring they can easily fulfill interest commitments and evade financial strain.

5.4 Contribution to Knowledge

The research addresses a gap within the current body of literature by investigating the impact of debt indices on the financial performance of Nigeria's oil and gas sector. Earlier studies often neglected this specific sector or concentrated on foreign contexts, leading to an informational void pertaining to Nigeria. By focusing on the Nigerian oil and gas industry, the study sheds light on the distinct dynamics and factors influencing financial performance within this domain.

The outcomes underscore the significance of the interest coverage ratio as a pivotal determinant of financial performance among Nigerian oil and gas enterprises. The research discloses that, among the examined variables, solely the interest coverage ratio exhibits a favorable influence on return on assets (ROA). This underscores the crucial nature of

maintaining a sound interest coverage ratio for Nigerian oil and gas companies, as it aids in covering interest obligations and enhancing ROA.

The study's contribution to existing knowledge enriches the comprehension of how debt indices impact the financial performance of Nigeria's oil and gas sector. The findings hold practical implications for decision-makers within oil and gas enterprises, financial institutions, and regulatory entities in Nigeria. They offer guidance for devising strategies aimed at enhancing financial performance and ensuring the sector's long-term viability.

REFERENCES

Adeyemi, S.B. and Oboh C.S. (2011). Perceived relationship between corporate capital structure and firm value in Nigeria. *International Journal of Business and Social Science*, 2(19).

Aqsa, I. and Ghulam, M.M. (2014). The impact of financial leverage on firm performance in fuel and energy sector, Pakistan. *European Journal of Business and Management*, 6(37), 339-347.

Adenugba, A.A., Ige, A.A and Kesinro, O.R. (2016). Financial leverage and firms' value: a study of selected firms in Nigeria. *European Journal of Research and Reflection in Management* Sciences, 4(1).

Ahmadu, A. (2020). Financial leverage and financial performance of oil and gas companies in Nigeria. *Open Journals of Management Science*, 1(1), 28-44.

Arif, S. and Muhammad, S.M. (2011). The impact of financial leverage to profitability study of non-financial companies listed in Indonesia stock exchange. *European Journal of Economics, Finance and Administrative Sciences*, 32, 136-158.

Enekwe, C.I. and Agu, C.I. (2014). The effect of financial leverage on financial performance: Evidence from quoted pharmaceutical companies in Nigeria. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 5 (3), 17-25.

Enekwe, C. I. (2015). The relationship between Financial Ratio Analysis and Corporate Profitability: A Study of Selected Quoted Oil and Gas Companies in Nigeria. *European Journal of Accounting, Auditing and Finance Research*, 3(2), 17-34.

Gweyi, M.O. and Karanja, J. (2014). Effect of financial leverage on financial performance of deposit taking savings and credit co-operative in Kenya. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 4(2), 176–184.

Gill, A. and Mathur, N. (2011). Factors that influence financial leverage of Canadian firms, *Journal of Applied Finance and Banking*, 1(2).

Ifeoma, P. (2020). Financial stability and firm's performance: A study of selected Oil and Gas firms in Nigeria. *AUDCE*, 16(2), 137-149.

Ilyukhin, E. (2015). The impact of financial leverage on firm performance: Evidence from Russia. *Journal of Corporate Finance Research*, 9(2), 24-36.

Kajola, S.O. (2008). Corporate governance and firm performance: The case of Nigerian listed firms, *European Journal of Economics, Finance and Administrative Sciences*, 14.

Karimi, M. and Kheirim, M. (2017). Impact of financial structure, financial leverage and profitability on companies shares value. *European Journal of Economics and Financial Research*, 2 (3), 51-58.

Modigliani, F. and Miller M. (1958). The cost of capital structure, corporation finance and the theory of Investment, *The American Economic Review*, 448(3).

Muhammad, K.S. (2018). Impact of financial leverage on firm performance: The case of listed oil refineries in Pakistan. *International Journal of Research in Social Sciences,* 8(10).

Nwanna, I.O. and Ivie, G. (2017). Effect of financial leverage on firm's performance: a study of Nigerian banks. *International Journal of Recent Scientific Research*, 8(7), 18554-18564.

Nhung, T.H. (2017). The impact of financial leverage on firm performance: a case study of listed oil and gas companies in England. *International Journal of Economics, Commerce and Management*, 5(6), 477-485.

Nawaz, A., Atif, S. and Aamir, F.S. (2015). Impact of financial leverage on firms' profitability: An investigation from cement sector of Pakistan. *Research Journal of Finance and Accounting*, 6(7), 75-80.

Obumneme R. (2023). Impact of capital structure on financial performance of oil and gas firms in Nigeria. *Future Business Journal*, 11.

Orajaka, U.P. (2017). The impact of leverage financing on financial performance of some manufacturing industries in Nigerian stock exchange. *Saudi Journal of Business and Management Studies*, 2(7), 716-726.

Ojo, A.S. (2012). The effect of financial leverage on corporate performance of some selected companies in Nigeria. *Canadian Social Sciences.*

Oloyede, B. (2000). *Principles of Financial Management,* Forthright Educational Publishers, Lagos.

Umobong, A.A. (2015). Assessing the impact of liquidity and profitability ratios on growth of profits in pharmaceutical firms in Nigeria. *European Journal of Accounting, Auditing and Finance Research*. 3(10), 97-114.

Vintilă, G. and Duca, F. (2012). The Impact of financial leverage to profitability study of companies listed in Bucharest stock exchange. *"Ovidius" University Annals, Economic Sciences Series*, 12(1).

Umer, I. and Muhammad, U. (2018). Impact of financial leverage on firm performance. *SEISENSE Journal of Management,* 1(2), 70-78.

Syed, S.F. (2013). Relationship between financial leverage and financial performance: empirical evidence of listed sugar companies of Pakistan. *Global Journal of Management and Business Research Finance*, 13(8).

Zahoor, H.J., Huma, R., Bader, A. and Muhammad, F.N. (2015). Effect of financial leverage on performance of the Firms: Empirical evidence from Pakistan. *SPOUDAI Journal of Economics and Business,* 65(2), 87-95.