

Capital Structure and Financial Performance of Quoted Oil and Gas Companies in Nigeria

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ABSTRACT

This study investigates the impact of capital structure on the financial performance of quoted oil and gas companies listed on the Nigerian Exchange Group. Specifically, it examines the effects of total debt ratio, long-term debt ratio, short-term debt ratio, and equity ratio on the market value of firms, measured by Tobin's Q, over the period from 2014 to 2023. The research utilizes a longitudinal approach with a sample of eight publicly traded oil and gas companies, employing data obtained from annual reports. A random effects model, analyzed through panel least squares regression, was used to assess the relationships between the financial ratios and firm performance. The results revealed that total debt ratio positively influences firm performance, indicating that higher total debt is associated with increased firm market value. Conversely, long-term and short-term debt ratios exhibit negative impacts on firm performance as measured by Tobin's Q, suggesting that excessive long-term and short-term debt can reduce market value. The equity ratio shows a significant positive relationship with Tobin's Q, implying that a higher equity ratio enhances firm performance.

Keywords: Capital Structure, Equity, Financial Performance, Short-Term Debt, Long-Term Debt.

INTRODUCTION

A company's capital structure plays an important role in determining its long-term growth, development, and sustainability. Capital structure refers to a company's overall funding sources, which can include retained earnings, shares, and debt financing. Due to its importance in corporate performance, capital structure is recognized as one of the most important decisions in firm finance policy (Segun et al., 2021). The purpose of selecting a capital structure

is to identify the optimal combination of funding resources that will deliver the largest return while not risking stakeholders' interests (Fatoki, Wafula, & Waweru, 2023). A company's performance is measured by how effectively and efficiently it meets its goals, which might be financial or operational. A company's financial performance is concerned with maximising profit for both shareholders and assets, whereas operational performance is concerned with sales and market value growth and expansion (Nwude & Anyalechi, 2018). Return on assets and Return on equity has long been the most generally used performance metric that takes into account the interests of all firm stakeholders (Etale, 2020). However, these indications (the book value measure of financial performance) are essentially historical in nature and completely exclude a more objective (market value) assessment of financial performance. This entails taking a step back and logically assessing financial performance through a market-based evaluation rather than a book-based metric.

There have been different findings regarding the impact of capital structure on the financial performance of enterprises around the world. Salamba (2015), El-Maude et al. (2016), Ajibola et al. (2023), Nwude and Anyalechi (2018), Etale (2020), Fatima and Bashir (2021), and Tanko et al. (2023) found a positive correlation between capital structure and firm financial performance, while Birru (2016), Uremadu (2018), Aziz and Abbas (2019), Olaoye et al. (2022), Segun et al. (2021), and Tajudeen et al. (2022) found negative results on their studies. The inconsistent results can be ascribed to differences in sample size, period coverage, geographical scope, and methodology used. Furthermore, researchers such as Salamba (2015), Birru (2016), Makwe et al. (2021), and Olaoye et al. (2021) have devoted a significant amount of their work to the empirical measurement and testing of enterprises' financial performance using book value measures of financial performance, such as return on equity and return on assets. However, Sathyamoorthi et al. (2019) proposed a market-based financial performance measurement, similar to the Tobin's Q, and stated that a more timely measure of financial performance was necessary. More empirical research is therefore required to test the effect of capital structure on a firm's financial performance using two performance measures (book and market value), with the goal of producing robust and insightful empirical results. The use of this market-based measure has become a focus of empirical research.

The broad objective of this study was to examine the impact of capital structure on firm performance of quoted oil and gas companies in Nigeria, while the specific objectives of the study are to examine the impact of total debt ratio on the financial performance of quoted oil and gas companies in Nigeria, to determine the impact of long-term debt ratio on the financial performance of quoted oil and gas companies in Nigeria; to examine the impact of Short term debt ratio on the financial performance of quoted oil and gas companies in Nigeria; and to examine the impact of equity ratio on the financial performance of quoted oil and gas companies in Nigeria;

Significance of the Study

This study aims to ascertain whether capital structure has any impact on the financial performance of quoted oil and gas companies in Nigeria. The results of this research will be of significant interest to various stakeholders. An unbiased analysis of the link between capital structure and financial success will be valuable for the management of listed corporations. It will aid in developing suitable strategic financing plans that keep the organization competitive

in the market while maintaining its financial performance and position. Furthermore, the findings of this research will contribute to the existing body of knowledge on capital structure and financial performance. It will provide empirical and realistic data that can serve as a foundation for further studies by researchers interested in the relationship between capital structure and firm performance.

Limitations of the Study

There are some limitations in empirically testing the effect of capital structure on the financial performance of quoted oil and gas companies in Nigeria. The data for empirical analysis was extracted from the annual reports of the companies under study, which may have inherent limitations in terms of accuracy and completeness. Furthermore, the study is limited to only the oil and gas companies listed on the Nigerian Exchange Group, which may not provide a comprehensive view of the entire sector or other industries.

LITERATURE REVIEW

Financial Performance (Tobin's Q)

By matching the market value of a company's shares to the replacement value of its physical assets, James Tobin's Q ratio evaluates its financial performance. Dividing the value of the stock market by the cost of replacing the company's present assets yields Tobin's Q (Butt, Baig & Seyyed, 2011). While a ratio below one signals the company is cheap and a possible takeover target, a Q ratio above one indicates effective asset use and advises the company should take into purchasing new assets (Tobin, 1969). Though highly popular, Tobin's Q has limits particularly in terms of accounting for intangibles as marketing, human resources, and R&D (Alqatan, et. al., 2019; Wei & Lin, 2021). Critics contend it depends on managerial decisions on production and cost discipline (Dybvig & Warachka, 2015) and might result in false positives. Though they still have flaws, normalized by capital, gross profit and operating expenses provide better indicators of operational efficiency (Gregory, 2020). Including intangibles, total assets throw further complexity on Tobin's Q as a performance metric. Furthermore, lacking in correct reflection of cost discipline is using sales as a denominator, therefore lowering Tobin's Q explaining power (Freimark, 2020). Therefore, even if Tobin's Q is still a commonly utilized indicator of company value and operational performance in corporate governance research, it has clear shortcomings in this regard.

Capital Structure

A company's capital structure is the combination of debt and equity that is used to finance its operations. It includes all obligations, equity, and liabilities that are structured to affect the value and performance of the business.

Debt:

According to Tanko et al. (2023), the debt-to-equity ratio that optimizes a company's value is the ideal capital structure. Thus, choosing a company's capital structure is a crucial strategic choice that needs to be made by corporate executives. To strengthen its capital structure, a business may choose to issue additional debt or shares. The freshly acquired funds may be used to invest in new assets or to repurchase existing debt or stock as a kind of recapitalization (Etale, 2020; Onozare & Eshemokhai, 2021). Fatima and Bashir (2023) examined Pakistani textile companies and found that high levels of financial leverage (65% debt) were prevalent.

Their study emphasized that debt could potentially improve performance if managed properly. This supports the idea that industry-specific factors play a crucial role in the effectiveness of debt financing. Additionally, Tanko et al. (2023) explored the influence of board financial literacy on capital structure and performance in Nigerian non-financial firms from 2009 to 2018. They found that long-term debt had a positive effect on return on assets (ROA) and that financial literacy significantly impacted capital structure and performance, recommending that firms optimize their capital structure and include financially literate board members. Segun et al. (2021) investigated Nigerian oil and gas companies and found that short-term debt negatively affected return on assets, whereas the debt-to-equity ratio had a significant positive influence on performance.

Total Debt Ratio:

The debt ratio, which can be stated as a percentage or in decimals, is a financial indicator that shows how much of an organization's assets are financed by debt. It is defined as the ratio of total debt to total assets (Kim & Lim, 2018). According to Ayomitunde et al. (2019), a ratio larger than one indicates that the corporation is more dependent on debt because its obligations exceed its assets. This raises the possibility of dangers in the event that interest rates increase and loan defaults result (Akinleye & Akomolafe, 2022). Nkak (2020) investigated the performance of quoted industrial companies on the Nigerian Stock Exchange from 2014 to 2019. His study revealed that Non-Current Debt to Total Assets (NCD) and Total Debt to Equity (TDE) had significant relationships with Return on Equity (ROE), though TDE had a negative effect. This contrasts with Udobi-Owoloja et al., who found a positive impact of debt on profitability. Nkak's results suggest a more complex interplay, where long-term debt is preferable, and highlights the need for a balanced approach to debt and equity. Thus, the relevant hypothesis for the study is stated in null form as:

- *H₁: Total debt ratio does not affect the financial performance of quoted oil and gas companies in Nigeria.*

Long-Term Debt Ratio:

According to Angahar and Ivarave (2019), long-term debt is defined as any loan that lasts longer than a year, including mortgages and long-term leases. Greater company risk is indicated by high long-term debt ratios, which may discourage creditors (Ayomitunde et al., 2019). Mutua and Atheru (2020) examined the capital structure of manufacturing firms listed on the Nairobi Securities Exchange, Kenya, from 1990 to 2007. Their study, which utilized a descriptive research design and multiple regressions, found that retained earnings and equity negatively impacted financial performance. However, long-term debt had a positive effect on Return on Equity (ROE). This suggests that while equity and retained earnings might hinder performance, long-term debt can be beneficial, prompting recommendations for manufacturing firms to optimize their capital structure and invest in new programs. Thus, the relevant hypothesis for the study is stated in null form as:

- *H₂: Long-term debt ratio does not affect the financial performance of quoted oil and gas companies in Nigeria.*

Short Term Debt Ratio:

Short-term debt refers to loans and obligations due within one year, including creditors and accruals, used primarily for day-to-day operations (Tanko, et. al., 2023). It can be determined

by dividing current obligations by total assets, showing the percentage of assets financed by short-term debt. Lower short-term debt ratios indicate a more stable corporation with better longevity prospects. Short-term debt is used to meet working capital needs, improve overall performance, and finance daily operations like inventory, raw material supply, and employee salaries (Uremadu, 2018).

Popoola and Suleiman (2020) focused on Nigerian deposit money institutions from 2009 to 2018, using Return on Assets (ROA) as the performance metric. Their findings indicate that while long-term debt had a negative effect, short-term debt positively influenced ROA. This reflects a similar perspective to Mutua and Atheru's findings, where short-term debt is shown to be beneficial. The study suggests that banks should explore short-term debt options to improve performance, complementing the earlier findings of beneficial effects of specific types of debt. Thus, the relevant hypothesis for the study is stated in null form as:

- *H₃: Short term debt ratio does not affect the financial performance of quoted oil and gas companies in Nigeria.*

Equity:

Any fixed interest-bearing stock is classified as debt, whereas common shares with retained earnings are classified as equity. Ayomitunde et al. (2019) and Ogbulu et al. (2018) define it as "the various sources of funds that make up a firm's capital." Nwude and Anyalechi (2018) investigated the effects of financing mix on the performance of commercial banks, using data from ten banks over a 14-year period (2000–2013). Their findings align with Akingunola et al., (2018) as they also observed that debt financing negatively affects Return on Assets (ROA). However, they noted that the debt-equity ratio positively impacts Return on Equity (ROE), indicating that a balanced debt-equity ratio can enhance equity returns despite the adverse effects on asset returns. Makwe et al. (2022) studied selected manufacturing enterprises on the Nigerian Stock Exchange from 2009 to 2019. Their analysis revealed a significant relationship between capital structure and financial performance, suggesting that reducing debt financing and increasing equity could enhance returns on assets and investments. This contrasts with Imeokparia et al. (2022), who explored financial leverage in Nigerian deposit money banks and manufacturing firms. Their study found that both total debt ratios and total debt-to-equity ratios negatively impacted financial performance, suggesting a need for optimal debt use. They noted that high debt levels are common in deposit money banks, which could hinder performance. Thus, the relevant hypothesis for the study is stated in null form as:

- *H₄: Equity ratio does not affect the financial performance of quoted oil and gas companies in Nigeria.*

Theoretical Review

Pecking Order Theory:

The Pecking Order Theory, popularized by Myers and Majluf (1984), suggests that firms prioritize internal financing sources first, such as retained earnings, and only turn to external financing like debt and equity when necessary (Nkak, 2020). This theory contrasts with the Trade-off Theory, which emphasizes interest tax shelters and debt costs, by focusing on the least resistance principle. Firms with investment needs exceeding internal resources will seek additional loans (Ajibola, Wisdom & Qudus, 2023). According to the theory, the optimal capital structure follows a hierarchy: internal sources first, then debt, and equity as a last resort

(Tanko, et. al., 2023). This order is preferred to leverage tax benefits and manage financial risks (Pandey & Sahu, 2020).

Knowledge Gap Identified:

Despite numerous empirical studies investigating the relationship between capital structure and financial performance, several knowledge gaps remain. For instance, Akingunola, Olawale, and Olaniyan (2018) and Nwude and Anyalechi (2018) both found that debt financing negatively impacted Return on Assets (ROA), though the debt-equity ratio positively influenced Return on Equity (ROE). This aligns with the criticism by Sathyamoorthi et al. (2019), who argue that ROA, as an accounting measure, may not fully capture the broader aspects of financial performance, since it reflects past transactions rather than shareholder expectations. The studies reviewed demonstrate an inconsistency in findings, with some indicating positive effects of debt on performance while others highlight negative impacts or no significant effect at all. The reviewed studies predominantly utilized either accounting measures of financial performance, such as Return on Assets (ROA), or market value measures like Tobin's Q. The findings from these studies are often inconclusive. Given the limitations associated with each performance measure, this study aims to address this gap by employing Tobin's Q to evaluate the impact of capital structure on firm performance.

METHODOLOGY

A longitudinal research design was used in this study. This research strategy is appropriate because it comprises several observations of the same variables (firms) across short or long periods of time. This design is adopted as variables cannot be altered to suit the researcher's interests because it uses historic data.

This study examines the impact of capital structure on the financial performance of quoted oil and gas companies listed on the Nigerian Exchange Group for the period 2014 to 2023. The research focuses on the eight (8) oil and gas companies that are publicly traded on the Nigerian Exchange Group as of June 30, 2024 which also formed the sample size for the study using the census sampling technique. Relevant panel data were obtained from the annual reports of these firms, covering the period from 2014 to 2023.

The study's model was analyzed using the panel least squares analytical approach. As a panel variation of the ordinary least square, the panel least square relies on the same underlying assumptions that control other least square methods. Using a higher degree of freedom results in less biased estimations since this strategy avoids multicollinearity difficulties. For example, one advantage of panel least square over the conventional least square approach is that it uses more observations than least square methods.

A multiple linear model developed by Tanko, et. al., (2023) was adapted for this study.

$$ROA_{it} = \beta_0 + \beta_1LTD_{it} + \beta_2STD_{it} + \beta_3ETD_{it} + \beta_4BFL_{it} + \beta_5FS_{it} + \beta_6FA_{it} + \beta_7AS_{it} + \varepsilon_{it} \quad (3.1)$$

Where;

ROA = Return On Assets

LTD = Long Term Debt

STD = Short Term debt
 ETD = Equity to debt
 BFL = Board Financial Literacy
 FS = Firm size
 FA = Firm Age
 AS = Audit quality

The model captures the contribution of total debt ratio, long-term debt ratio and Short term debt ratio on the financial performance of selected firms using Return On Assets. This study however modified the model above and made use of Tobin's Q (Market Value) instead of Return on Assets (Book Value) as a measure of financial performance.

The functional form of the model is expressed below:

$$\text{Tobin's } Q = F(\text{TDR, LTDR, STDR, EQR, FSIZE}) \quad (3.2)$$

Where;

TOBINS Q = Market Value of the Firm
 TDR = total debt ratio
 LTDR = long-term debt ratio
 STDR = Short term debt ratio
 EQR = Equity ratio
Control Variable:
 FSIZE = Firm Size

Equations (3.2) is expressed linearly/econometrically as follows:

$$\text{Tobin's } Q_{it} = \alpha_0 + \alpha_1 TDR_{it} + \alpha_2 LTDR_{it} + \alpha_3 STDR_{it} + \alpha_4 EQR_{it} + \alpha_5 FSIZE_{it} + \varepsilon_{it} \quad (3.3)$$

Where:

i = firm 1 to 8 for the eight sampled firms.
 t = year 2014 to 2023 for each of the eight sampled firms.
 $\alpha_0 - \alpha_5$, are variables coefficients to be estimated.
 ε is the stochastic element representing all other unspecified influence on return on equity and return on asset.

Apriori Expectation

The apriori expectations are:

$$\alpha_1 - \alpha_5 > 0$$

Table 3.1: Measurement and Operationalization of Variables

	Variable	Mode of Measurement	Source
	Dependent Variable		
1	Tobins Q	Total Market Value of Firm	Ajao & Kokumo-Oyakhire (2021)
		Total Assets Value	

	Independent Variables		
1	TDR = total debt ratio	Total Liabilities / Total Assets	Tanko et. al., (2023)
2	LTDR = long-term debt ratio	Non-current Liabilities / Total Assets	Tanko et. al., (2023)
3	STDR = Short term debt ratio	Current Liabilities / Total Assets	Tanko et. al., (2023)
5	EQR = Equity ratio	total shareholders fund/total asset	Tanko et. al., (2023)
	Control Variable		
1	Firm Size (FSIZE)	Log of Total Assets	Ajao & Kokumo-Oyakhire (2021)

Source: Author's Compilation (2024).

DATA PRESENTATION AND INTERPRETATION

Descriptive Statistics

Before making a formal estimate, it is crucial to do summary statistics. In this research, we checked if our data collection follows a normal distribution. It is possible to tell if the data set has a normal distribution curve by using the descriptive statistics. Normality may be quickly assessed by examining the standard deviations, skewness, kurtosis, and JarqueBera. The data is tabulated for convenience purposes below.

Table 4.1: Descriptive Statistics

	TOBINSQ	TDR	LTDR	STDR	EQR	FSIZE
Mean	2.293	0.421	0.144	0.277	0.569	11.171
Std. Dev.	3.380	0.391	0.204	0.297	0.705	4.883
Skewness	2.992	0.517	1.778	0.827	1.842	(0.485)
Kurtosis	17.540	1.876	6.022	2.473	6.718	3.436
Jarque-Bera	824.113	7.770	72.587	10.055	91.314	3.769
Probability	0.000	0.021	0.000	0.007	0.000	0.152

Source: Researcher's computation (2024)

The descriptive statistics for the study on the impact of capital structure on firm performance reveal significant variability and deviations from normality across key financial metrics. Tobin's Q, with a mean of 2.293, shows high variability and skewness, indicating that some firms are valued much higher than their assets suggest. The Total Debt Ratio (TDR) averages 0.421, reflecting substantial differences in debt levels among firms, with moderate skewness and less extreme kurtosis. Long-Term Debt Ratio (LTDR) averages 0.144, with high variability and significant positive skewness, suggesting some firms have notably high long-term debt. The Short-Term Debt Ratio (STDR), averaging 0.277, also displays considerable variability, moderate skewness, and relatively normal kurtosis. The Equity Ratio (EQR) shows an average of 0.569, with high variability and positive skewness, indicating a mix of low and high equity ratios.

Table 4.2: Correlation Analysis

	TOBINSQ	TDR	LTDR	STDR	EQR	FSIZE
TOBINSQ	1.000					
*	-----					

TDR	-0.166	1.000				
*	*0.142	-----				
LTDR	-0.109	0.664	1.000			
*	*0.338	*0.000	-----			
STDR	-0.143	0.858	0.186	1.000		
*	*0.205	*0.000	*0.099	-----		
EQR	0.435	-0.122	-0.260	0.019	1.000	
*	*0.000	*0.282	*0.020	*0.870	-----	
FSIZE	-0.235	0.102	0.063	0.091	0.028	1.000
*	*0.036	*0.368	*0.578	*0.424	*0.806	-----

Source: Researcher's computation (2024): Probability Values in (*)

The correlation analysis reveals key relationships between capital structure components and firm performance metrics. Tobin's Q (TOBINSQ) shows a significant positive correlation with the equity ratio (EQR) (0.435, $p < 0.001$). Conversely, Tobin's Q has a negative correlation with firm size (FSIZE) (-0.235, $p = 0.036$), suggesting that larger firms may have lower market values relative to their assets. The total debt ratio (TDR) is strongly positively correlated with both the long-term debt ratio (LTDR) (0.664, $p < 0.001$) and the short-term debt ratio (STDR) (0.858, $p < 0.001$), reflecting that firms with higher total debt also use more long-term and short-term debt. The LTDR and STDR have a weak correlation (0.186, $p = 0.099$), indicating a less direct relationship between these two debt types. The equity ratio shows weak correlations with the total debt ratio (-0.122, $p = 0.282$) and LTDR (-0.260, $p = 0.020$), suggesting it has a minimal influence on the overall debt structure.

Table 4.3: The Hausman's Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	1.170064	5	0.9477

Source: Researcher's computation (2024)

The Hausman test results indicate that the random effects model is more appropriate for the panel data analysis of your study. The test produced a Chi-Sq. statistic of 1.170064 with 5 degrees of freedom and a p-value of 0.9477, which is significantly higher than the common significance level of 0.05. Therefore, we fail to reject the null hypothesis, suggesting no systematic difference between the coefficients of the fixed effects and random effects models. With this finding, it is recommended that the random effects model should be used for analyzing the impact of capital structure on the financial performance of quoted oil and gas companies in Nigeria.

Regression Analysis (Random Effect)

Table 4.4: Regression Summary

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.7529	0.922978	2.9863	0.0038
TDR	25.9039	0.000676	3.1435	0.0035
LTDR	-22.0905	0.980837	-3.1434	0.0024
STDR	-20.1129	0.498058	-3.1437	0.0024
EQR	2.2057	0.484142	4.6901	0.0000
FSIZE	-0.1442	0.067925	-2.1312	0.0364

R-squared	0.8627			
Adjusted R-squared	0.7197			
Prob(F-statistic)	0.0000			
Durbin-Watson stat	1.6076			

Dependent variable = TOBINS Q (Market Value of the Firm)

Source: Researcher's computation (2024)

The regression analysis, using a random effect model, explores the impact of various financial ratios on the market value of the firm, represented by Tobin's Q. The model explains a significant portion of the variation in Tobin's Q, with an R-squared value of 0.8627 and an adjusted R-squared of 0.7197. This high R-squared value indicates that the independent variables collectively explain 86.27% of the variation in the market value of the firm. The Prob (F-statistic) value of 0.0000 suggests that the overall model is statistically significant at 1% level of significance.

DISCUSSION OF FINDINGS

The analysis identifies a positive and statistically significant relationship between total debt ratio and Tobin's Q. This indicates that higher total debt ratios are associated with increased market value of the firm. The strong positive impact of total debt ratio on Tobin's Q suggests that leverage, when managed effectively, can enhance the market valuation of oil and gas companies in Nigeria. This finding implies that firms may benefit from strategic use of debt to finance growth and operations, potentially leading to higher investor confidence and market value. These findings are however in contrast with the findings of Akingunola, et. al., (2018) but agree with that of Udobi-Owoloja et al. (2020); Nkak (2020) and Makwe et al. (2022).

In contrast, the long-term debt ratio shows a negative and statistically significant relationship with Tobin's Q, with a coefficient of -22.0905 and a p-value of 0.0024 as found by Akingunola et al., (2018); Akingunola, et. al., (2018) and Olaoye et al. (2022). This suggests that an increase in long-term debt ratio leads to a decrease in the market value of the firm. The negative impact of long-term debt ratio may indicate potential risks associated with long-term borrowing, such as increased financial burden and interest obligations over time. For oil and gas companies, this highlights the importance of cautious long-term debt management to avoid adverse effects on market valuation. Similarly, the STDR also exhibits a negative and statistically significant relationship with Tobin's Q, with a coefficient of -20.1129 and a p-value of 0.0024. This indicates that higher short-term debt ratios are associated with lower market values of the firm in line with the findings of Mutua and Atheru (2020). The negative impact of STDR suggests that reliance on short-term debt may pose liquidity risks and operational challenges, which can negatively affect investor perception and market value. Oil and gas companies should therefore consider optimizing their debt maturity structure to mitigate these risks. The EQR presents a positive and statistically significant relationship with Tobin's Q, with a coefficient of 2.2057 and a p-value of 0.0000. This finding implies that an increase in the equity ratio significantly enhances the market value of the firm. A higher equity ratio indicates a stronger equity base, which can improve financial stability and investor confidence. This results are in contrast with the findings of Udobi-Owoloja et al. (2020) in the Nigerian consumer products sector. For oil and gas companies, maintaining a healthy equity ratio can signal sound financial health and resilience, thereby positively influencing market valuation.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

The regression analysis, using a random effect model, reveals significant insights into the impact of various financial ratios on the market value of firms, as represented by Tobin's Q. The model explains a substantial portion of the variation in Tobin's Q, with an R-squared value of 0.8627 and an adjusted R-squared of 0.7197. The results indicate that the total debt ratio (TDR) positively affects Tobin's Q, suggesting that higher total debt is associated with increased market value. Conversely, both the long-term debt ratio (LTDR) and short-term debt ratio (STDR) exhibit negative impacts on Tobin's Q, indicating that higher levels of these debts correspond to decreased market value. The equity ratio (EQR), however, shows a strong positive relationship with Tobin's Q, implying that increased equity significantly enhances the market value of the firm.

Conclusion

The study concludes that the financial structure of a firm, particularly its debt and equity ratios, plays a crucial role in determining its market value. Specifically, while higher total debt can positively influence the market value, the adverse effects of excessive long-term and short-term debt highlight the need for balanced debt management. Additionally, a robust equity base is essential for improving market valuation. These findings emphasize the importance of strategic financial management in optimizing the market value of oil and gas companies in Nigeria.

Recommendations

1. Firms should carefully balance their use of total, long-term, and short-term debt. While leveraging total debt can be beneficial, excessive reliance on long-term and short-term debt should be avoided to prevent negative impacts on market value.
2. Increasing the equity ratio is critical for improving financial stability and market perception. Firms should explore opportunities to raise equity through methods such as issuing new shares, retaining earnings, or attracting equity investments.
3. Continuous monitoring and analysis of financial ratios are essential for informed decision-making. Firms should regularly assess their financial structure and performance metrics to identify areas for improvement and implement timely corrective measures.
4. Implementing robust risk management practices is crucial to mitigate the potential negative impacts of debt. Firms should develop risk management frameworks that include thorough assessments of debt levels, interest rate exposure, and liquidity risks.

Contribution to Knowledge

This research significantly enhances our understanding of the relationship between capital structure and financial performance within the Nigerian oil and gas sector. It reveals that while the total debt ratio positively impacts firm value, the long-term and short-term debt ratios have a negative effect, highlighting the importance of carefully managing different types of debt. The study also underscores the positive role of equity financing in enhancing firm value, suggesting that a strong equity base can be beneficial in this sector.

Suggestion for Future Research

Future research could build on this study by exploring several avenues. Firstly, investigating the impact of different types of debt (such as convertible vs. non-convertible debt) on firm

performance could provide deeper insights into the nuances of debt management. Additionally, comparative studies across different sectors or geographical regions could also be valuable to determine whether the observed relationships hold in other contexts or are unique to the Nigerian oil and gas sector. Finally, exploring the impact of macroeconomic factors, such as interest rates or economic downturns, on the relationship between capital structure and firm performance could provide further insights into how external conditions influence financial outcomes.

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Appendix I: List of Companies

	Company	Sector
1	Capital Oil Plc	OIL AND GAS
2	Conoil Plc	OIL AND GAS
3	Eterna Plc.	OIL AND GAS
4	Japaul Gold & Ventures Plc	OIL AND GAS
5	Mrs Oil Nigeria Plc.	OIL AND GAS
6	Oando	OIL AND GAS
7	Seplat Energy Plc	OIL AND GAS
8	Totalenergies Marketing Nigeria Plc	OIL AND GAS

Appendix 7: Data Set

		TOBINS Q	TDR	LTDR	STDR	EQR	FSIZE
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Name of coy	Year	Market Value of the Firm	total debt ratio	long-term debt ratio	Short term debt ratio	Equity ratio	Firm Size
Capital Oil Plc	2014	1.4551	0.5163	0.4212	0.0951	0.4837	7.4382
Capital Oil Plc	2015	1.5026	0.5380	0.4443	0.0937	0.4620	7.4061
Capital Oil Plc	2016	2.1688	0.6933	0.5750	0.1183	0.3067	7.1524
Capital Oil Plc	2017	2.4492	0.7958	0.6710	0.1248	0.2042	7.0308
Capital Oil Plc	2018	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Capital Oil Plc	2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Capital Oil Plc	2020	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Capital Oil Plc	2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Capital Oil Plc	2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Capital Oil Plc	2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Conoil Plc	2014	0.2811	0.4430	0.0130	0.4300	0.0366	11.5088
Conoil Plc	2015	0.4138	0.4261	0.0140	0.4121	0.0434	11.1399
Conoil Plc	2016	0.3085	0.3425	0.0084	0.3341	0.0247	11.4508
Conoil Plc	2017	0.3603	0.4995	0.0092	0.4903	0.0447	11.3129
Conoil Plc	2018	0.3078	0.6600	0.0078	0.6522	0.0410	11.4874
Conoil Plc	2019	0.2698	0.5109	0.0047	0.5062	0.0295	11.6359
Conoil Plc	2020	0.2410	0.2280	0.0075	0.2205	0.0118	11.7651
Conoil Plc	2021	0.2184	0.2231	0.0055	0.2176	0.0193	11.8796
Conoil Plc	2022	0.4858	0.6205	0.0114	0.6091	0.0305	11.0960
Conoil Plc	2023	0.2638	0.6953	0.0071	0.6882	0.0361	11.5898
Eterna Plc.	2014	0.3814	0.7009	0.1126	0.5883	0.5250	9.4845
Eterna Plc.	2015	0.4236	0.1188	0.0173	0.1015	0.5196	9.4827
Eterna Plc.	2016	0.5355	0.2791	0.0426	0.2365	0.6067	9.3152
Eterna Plc.	2017	0.3519	0.6012	0.4930	0.1082	0.4557	9.6260
Eterna Plc.	2018	0.3537	0.4794	0.3181	0.1613	0.4298	9.6907
Eterna Plc.	2019	0.3823	0.1510	0.0552	0.0957	0.5237	9.4991
Eterna Plc.	2020	0.4423	0.1576	0.0294	0.1282	0.5668	9.4260
Eterna Plc.	2021	0.4214	0.1923	0.0289	0.1634	0.5838	9.4024
Eterna Plc.	2022	0.4285	0.1188	0.0173	0.1015	0.5420	9.4827
Eterna Plc.	2023	0.2331	0.0090	0.0035	0.0055	0.3046	10.0648
Japaul Gold & Ventures Plc	2014	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Japaul Gold & Ventures Plc	2015	0.0188	0.0619	0.0119	0.0500	0.0500	12.1412
Japaul Gold & Ventures Plc	2016	0.0263	0.0511	0.0023	0.0488	0.0488	12.1158
Japaul Gold & Ventures Plc	2017	0.0239	0.0357	0.0009	0.0348	0.0348	12.0451
Japaul Gold & Ventures Plc	2018	0.0214	0.0360	0.0193	0.0167	0.0167	12.0348
Japaul Gold & Ventures Plc	2019	0.0225	0.0448	0.0258	0.0190	0.0190	12.0401
Japaul Gold & Ventures Plc	2020	0.0232	0.0381	0.0371	0.0010	0.0028	11.9580
Japaul Gold & Ventures Plc	2021	0.0244	0.0414	0.0050	0.0364	0.0022	11.7821
Japaul Gold & Ventures Plc	2022	0.0299	0.0371	0.0090	0.0282	0.0010	11.7903
Japaul Gold & Ventures Plc	2023	0.0301	0.0325	0.0081	0.0244	0.0042	11.8095
Mrs Oil Nigeria Plc.	2014	0.0700	0.0111	0.0037	0.0074	0.0205	11.6947
Mrs Oil Nigeria Plc.	2015	0.0605	0.0102	0.0034	0.0068	0.0193	11.8760
Mrs Oil Nigeria Plc.	2016	0.0478	0.0096	0.0032	0.0064	0.0184	12.0295
Mrs Oil Nigeria Plc.	2017	0.0434	0.0091	0.0031	0.0060	0.0172	12.1624
Mrs Oil Nigeria Plc.	2018	0.0762	0.0163	0.0056	0.0108	0.0305	11.6554
Mrs Oil Nigeria Plc.	2019	0.0489	0.0105	0.0024	0.0082	0.0110	12.0643

Mrs Oil Nigeria Plc.	2020	0.0516	0.0102	0.0043	0.0060	0.0104	11.9725
Mrs Oil Nigeria Plc.	2021	0.0571	0.0061	0.0025	0.0037	0.0076	11.9540
Mrs Oil Nigeria Plc.	2022	0.0520	0.0062	0.0011	0.0052	0.0120	11.9713
Mrs Oil Nigeria Plc.	2023	0.0412	0.0061	0.0024	0.0037	0.0109	12.2216
Oando	2014	0.0038	0.1049	0.0541	0.0507	0.0012	14.1442
Oando	2015	0.0109	0.5568	0.3718	0.1850	0.0113	13.3161
Oando	2016	0.0070	0.3773	0.1680	0.2093	0.0256	14.1559
Oando	2017	0.0016	0.6283	0.1971	0.4312	0.0122	13.9554
Oando	2018	0.0081	0.7897	0.2857	0.5040	0.0214	13.9625
Oando	2019	0.0090	0.1081	0.0278	0.0803	0.0360	13.8063
Oando	2020	0.0068	0.3289	0.2782	0.0507	0.0128	14.1442
Oando	2021	0.0011	0.4668	0.3306	0.1361	0.0169	13.8136
Oando	2022	0.0087	0.5130	0.1813	0.3316	0.0264	13.3161
Oando	2023	0.0066	0.6794	0.1673	0.5122	0.0069	13.8158
Seplat Energy Plc	2014	0.0047	0.5180	0.2879	0.2301	0.0014	13.8620
Seplat Energy Plc	2015	0.0058	0.9131	0.0273	0.8858	0.0019	13.9061
Seplat Energy Plc	2016	0.0077	0.8744	0.2628	0.6117	0.0032	13.9484
Seplat Energy Plc	2017	0.0019	0.1920	0.1027	0.0893	0.0005	15.1087
Seplat Energy Plc	2018	0.0010	0.0847	0.0251	0.0596	0.0004	15.2136
Seplat Energy Plc	2019	0.0041	0.3269	0.0935	0.2334	0.0049	13.8717
Seplat Energy Plc	2020	0.0072	0.3648	0.1534	0.2114	0.0078	13.7652
Seplat Energy Plc	2021	0.0047	0.6047	0.0819	0.5228	0.0050	14.2105
Seplat Energy Plc	2022	0.0047	0.3600	0.3417	0.0182	0.0041	14.3793
Seplat Energy Plc	2023	0.0026	0.1920	0.1027	0.0893	0.0005	15.1087
Totalenergies Marketing Nigeria Plc	2014	0.3030	0.0021	0.0010	0.0011	0.1941	19.2800
Totalenergies Marketing Nigeria Plc	2015	0.2672	0.0017	0.0008	0.0009	0.1922	19.4250
Totalenergies Marketing Nigeria Plc	2016	0.6764	0.0050	0.0030	0.0020	0.5382	18.5147
Totalenergies Marketing Nigeria Plc	2017	1.7342	0.0103	0.0058	0.0045	1.4084	17.6593
Totalenergies Marketing Nigeria Plc	2018	0.4057	0.0027	0.0016	0.0011	0.3946	19.0280
Totalenergies Marketing Nigeria Plc	2019	0.5684	0.0056	0.0033	0.0023	0.2085	18.7210
Totalenergies Marketing Nigeria Plc	2020	0.5350	0.0057	0.0041	0.0016	0.1948	18.7826
Totalenergies Marketing Nigeria Plc	2021	0.3743	0.0038	0.0024	0.0014	0.1986	19.1565
Totalenergies Marketing Nigeria Plc	2022	0.2582	0.0026	0.0019	0.0006	0.1628	19.5450
Totalenergies Marketing Nigeria Plc	2023	0.2154	0.0021	0.0002	0.0019	0.1490	19.7427