Scholar's Digest- Journal of Multidisciplinary Studies
Volume 4, Issue 2, February 2025
ISSN (E): 2949-8856
Scholarsdigest.org

CAPITAL STRUCTURE DECISIONS AND FINANCIAL PERFORMANCE DYNAMICS OF LISTED OIL AND GAS COMPANIES IN NIGERIA: A PANEL DATA ANALYSIS (2014–2023)

WOBO, Henry. O
ODOEMELAM, Ndubuisi
Department of Accounting
Faculty of Management Sciences
University of Port Harcourt
Email: henry.wobo@uniport.edu.ng

Abstract
This research evaluates how capital structure impacts the financial outcomes of Nigeria's listed oil and gas firms between 2014 and 2023. Combining the analysis of panel data and the normal regression of ordinary least squares (OLS) regression reveals a substantial decrease in both EPS and ROA as a result of an increase in the equity ratio (DER). In contrast, the firm size demonstrates a positive and significant impact on financial performance, emphasizing the advantages of scale and enhanced access to resources. Unfortunately, there is no significant impact of the debt to asset ratio on the performance indicators. The outcomes align with both the "pecking order and trade-off theories", emphasizing the importance of a well-balanced funding approach. This research suggests that companies in the oil and gas industry should carefully manage their capital structure, avoiding excessive borrowing and taking advantage of the advantages that come with their size. Policymakers are also advised to foster a stable financial environment to facilitate the sector's expansion.

Keywords: Capital Mix, Financial Value, Debt-to-Equity Ratio, Oil and Gas Companies, Nigeria.

Introduction

The decision on an organization's mix of financing sources determines its financial outcomes, stability, and future existence. It demonstrates the deliberate combination of debt and equity utilized to fund business activities, which companies adopt to enhance value while minimizing financial risk (Nenu, Vintilă & Gherghina, 2018). An optimal capital structure supports corporate growth objectives, improves operational efficiency, and reduces the cost of capital. Financing decisions are even more critical in capital-intensive industries like oil and gas, where significant investments are required for exploration, production, and infrastructure development (Ewing & Thompson, 2016). Firms in this sector often face unique financial and operational challenges, including price volatility, regulatory uncertainties, and geopolitical risks (Lee, Lee & Xiao, 2021). Nigeria's oil and gas industry remains a major contributor to government revenues and foreign exchange earnings (Olayungbo & Olayemi, 2018). Despite this, many firms operating in the sector are burdened

by high debt levels, which, when combined with fluctuating oil prices, can threaten their financial sustainability (Adepoju, 2020).

Existing empirical literature presents mixed results on the influence of capital mix on the productivity of companies. Some researchers believe that higher leverage is capable of boosting firm performance by lowering the overall cost of capital, while others caution that excessive debt leads to financial distress and reduced profitability (Zhou et al., 2016). In one example, Opoku-Asante et al. (2022) found that high leverage negatively affects financial performance in Nigerian and Ghanaian firms. Similarly, Spiff and Oriji (2022) demonstrated that over-reliance on debt financing adversely impacts financial performance- "return on assets (ROA) and earnings per share (EPS)" within Nigeria's petroleum industry. On the other hand, an empirical study from developed economies documented a positive connection between capital mix and companies' value (Ahmed, Nugraha, & Hágen, 2024), underscoring the importance of context in understanding this relationship.

Given the varying findings and the capital-intensive nature of the oil and gas industry, this study examines the impact of capital structure on key financial metrics of Nigerian oil and gas firms listed on the Nigerian Securities Exchange. This study focuses on key performance indicators, including Return on Assets (ROA) and Earnings Per Share (EPS), using data collected between 2014 and 2023.

2. Literature Review and Hypotheses Development

This section lays the groundwork for the study by examining the theoretical context and prior research relevant to capital structure and corporate performance. It proposes a unique conceptual model that links financial structure elements, such as leverage ratios and organizational size,to firm outcomes like profitability and shareholder returns. Building on both classical finance theories and findings from earlier investigations, the study formulates testable propositions to guide the empirical analysis.

2.1 Conceptual Framework

The conceptual framework leading this study stems from prominent financial theories that examine the relationship between capital structure decisions and organizational performance. The key based on theories are the compromise theory, hack order theory and agent theory. Each offers a different perspective on how a company wants to build funding by assessing the benefits and costs associated with debt and equity. For example, while the compromise theory is emphasized, the benefits of debt compensation taxes with the risk of financial burdens are shown, the theory of chopping order suggests a hierarchy of funding based on information asymmetry. Agent theory, on the other hand, raises conflicts of interest among stakeholders and how financial decisions can contribute to mitigating them. Within this framework, this study examines capital structure indicators such as debt ratio (DER) and liabilities to assets (DAR) and assesses the potential impact on financial performance using asset return (ROA) and outcome (EPS) as key metrics. The size of the company is also considered a control variable and considers the effects related to the scale of performance.

2.1.1 Debt-to-Equity Ratio (DER) and Financial Performance

DER refers to the extent to which a firm finances its operations through the ratio of debt to shareholders' equity. A higher DER implies greater financial leverage, which can potentially boost returns when debt is used efficiently. However, excessive reliance on debt also exposes the firm to increased financial risk, particularly when interest obligations outweigh operating income (Salsabila, Putri & Mohammad, 2023).

ROA is a key indicator of how well a company utilizes its asset base to generate profit. Numerous studies have revealed a generally inverse relationship between DER and ROA, especially in capital-intensive industries where high debt levels elevate interest burdens and reduce net income (Sinamo et al., 2024). This observation aligns with the pecking order theory, which prioritizes internal financing over external debt to minimize the risks of financial distress (Myers & Majluf, 1984). However, some empirical findings (Ameira & Mohammad, 2023; Spiff & Oriji, 2022) suggest that, under specific conditions, leverage can positively influence ROA by enabling asset acquisition and revenue growth.

Hypothesis 1 (H01):

The ratio of debt to equity does not have a significant impact on the return on assets of publicly traded oil and gas firms in Nigeria

EPS is another important measure, representing the amount of profit distributed per outstanding share of a firm. While high leverage may diminish EPS due to increased debt servicing costs, some scholars argue that when debt is strategically applied, it can enhance shareholder value by supporting business expansion and profitability (Yusri & Syafiq, 2023). Nevertheless, in volatile sectors such as the petroleum and natural gas sector in Nigeria, excessive leverage is often linked to lower EPS (Njoku & Lee, 2025; Adepoju, 2020).

Hypothesis 2 (H02):

The capital structure, measured by the debt-to-equity ratio, does not significantly influence the earnings per share of listed oil and gas firms in Nigeria.

2.1.2 Debt-to-Asset Ratio (DAR) and Financial Performance

DAR assesses the extent to which a firm’s assets are funded using borrowed capital. A higher DAR indicates increased dependency on borrowed capital. While this can be advantageous when used for productive investments, it can also expose firms to financial instability if not properly managed.

Research findings on how the debt-to-asset ratio relates to return on assets have been inconsistent. Some studies (Opungu, 2016; Aggreh et al., 2023) report that high DAR tends to negatively affect ROA due to rising interest obligations that reduce net profitability. In contrast, research by Ameira and Mohammad (2023) suggests that moderate debt usage can support asset expansion and improve operational performance.

Hypothesis 3 (H03):
The level of debt used to finance total assets has no significant impact on the return on assets of Nigeria's listed oil and gas companies.
In relation to EPS, a high DAR may reduce distributable earnings, thereby lowering the returns per share. Supporting this, Spiff and Oriji (2022) as well as Adepoju (2020) highlight a negative correlation between DAR and EPS in highly leveraged firms. Nonetheless, other studies suggest that controlled use of debt can contribute positively to EPS by financing revenue-generating investments (Nwankwo et al., 2024).

Hypothesis 4 (H04):
The extent to which assets are financed through debt does not significantly affect the earnings per share of oil and gas companies listed on the Nigerian stock exchange.

2.1.3 Firm Size (FS) and Financial Performance

Firm size is widely recognized as an influential factor in financial performance evaluation. Bigger companies typically enjoy advantages such as reduced costs through economies of scale, wider market presence, and easier access to funding, all of which improve their capacity to handle risks and maintain consistent profits (Al-Hashimy, 2025). These advantages typically translate to superior ROA due to more efficient asset utilization and diversified income streams (John, 2021; Barney & Arikan, 2005). However, critics argue that increased size can lead to inefficiencies such as bureaucratic rigidity and reduced adaptability, which may suppress returns (Njoku & Lee, 2025).

Hypothesis 5 (H05):
The scale of a company has no meaningful impact on the return on assets of oil and gas firms listed in Nigeria
EPS may also be shaped by the scale of a company. Larger firms often demonstrate greater earnings stability and resilience to economic volatility compared to their smaller counterparts (Chen, Liu & Zhang, 2021; Spiff & Oriji, 2022). Nonetheless, unchecked expansion without strategic alignment can dilute earnings, negatively affecting EPS (Ayalew, 2021).

Hypothesis 6 (H06):
There is no statistically significant relationship between corporate size and earnings per share among publicly quoted oil and gas firms in Nigeria

2.2 Theoretical Framework

The connection between a firm's capital structure and its financial performance is explained through various foundational financial theories, each offering unique insights into corporate financing strategies. This research draws on three major theoretical frameworks: "Trade-off Theory, Pecking Order Theory, and Agency Theory." These theories provide an understanding of how various aspects of a company's financing structure, such as leverage ratios and organizational size, can shape financial metrics like ROA and EPS.

2.2.1Trade-off Theory (Kraus & Litzenberger, 1973)

The Trade-off Theory asserts that companies aim to establish an optimal capital structure by evaluating the advantages of debt-like tax shields and the ability to deduct interest against the possible drawbacks of financial distress. While debt can offer tax benefits, too much borrowing heightens the risk of bankruptcy or financial instability, potentially harming a company's performance. This framework suggests that companies carefully evaluate the trade-offs between the advantages of debt and the potential risks of financial distress to determine the most effective capital structure.

2.2.2 Pecking Order Theory (Myers & Majluf, 1984)

The Pecking Order Theory outlines a funding strategy where businesses choose financing methods based on the amount of information imbalance. Firms generally prefer to use their funds initially, followed by debt options, and only opt for equity financing when other alternatives are unavailable. This approach aims to reduce the uncertainties arising from information gaps and lower the costs associated with obtaining external capital. In terms of capital structure and financial performance, this theory suggests that companies with more internal funds are likely to face fewer challenges in external financing, potentially leading to better financial results. On the other hand, an over-reliance on debt could signal increased financial risk, which might negatively impact performance indicators like ROA and EPS.

2.2.3Agency Theory (Jensen & Meckling, 1976)

Agency Theory examines the potential misalignment of interests among various parties within a company—particularly between owners (shareholders) and those responsible for daily operations (managers). It argues that decisions related to a firm's financing mix, especially the amount of borrowed capital, can serve as tools to address these conflicts. As firm takes on more debt, it limits the discretionary funds available to management, which can help curb inefficient spending or self-serving behaviour. However, relying too heavily on debt may trigger financial strain, increasing agency-related costs and complicating efforts to maintain firm performance. This viewpoint emphasizes how a company's financing choices can affect the actions of its managers, ultimately playing a role in determining organizational performance.

These three theories provide the foundation for examining how capital structure components, such as DER, DAR, and FS, affect the financial performance of companies. By exploring these relationships, the study aims to contribute to the understanding of how firms in the oil and gas sector manage their capital structures to achieve optimal performance outcomes.

2.3 Empirical Review

Empirical findings on the relationship between capital structure and performance are diverse and dependent on context. Spiff and Oriji (2022), Abid et al. (2024) and Asaolu (2021) found that excess debt reduces profitability due to increased financial risk. On the other hand, the

study like Nazir et al. (2021) support the compromise theory by showing that a slight leverage increases the performance of the company.

Adept (2020) and Nwankwo et al. (2024) stressed that factors specific to the company, including size and liquidity, significantly affect the decision on the capital structure in the Nigerian sector of oil and gas. International studies (Chen et al., 2023; Frank & Goyal, 2009) show that the type of industry and macroeconomic conditions also form a choice of funding, emphasizing the need for analyzes specific to the sector.

This study contributes to the existing knowledge set by focusing on publicly mentioned oil and gas companies in Nigeria and evaluating how the components of the capital structure affect the ROA and EPS within the unique economic and regulatory landscapes of this industry.

3. Methodology

This research accepts the Ex Post Facto design, which is suitable for exploring records to reveal the context between variables without manipulating them. The analysis is based on secondary data obtained from the financial reports of five oil and gas companies listed on the Nigerian Exchange Limited (NGX), covering ten years from 2014 to 2023.

3.1 Population and Selection of Sample

The target population includes all oil and gas companies listed on NGX. Five companies were selected from this group by employing purposive sampling. The selection was governed by factors such as their market value, the availability of financial records and compliance with standard financial reporting procedures.

3.2 Data collection method

The study uses data extracted from audited financial statements and annual reports published on NGX and the official websites of selected companies. The key financial indicators used include the debt ratio to capital (DER), the debt ratio to the asset (DAR), the size of the company (FS), the return on assets (ROA) and the share profit (EPS). To ensure accuracy, data was confirmed by records of relevant regulatory institutions such as the Nigerian Stock Exchange Group (NGX) and the Nigerian Central Bank (CBN).

3.3 Model Specification

To analyze the relationship between capital structure and financial performance, this study employs a panel regression approach. The econometric models are specified as follows:

$$ROA_{it} = \beta_0 + \beta_1 DER_{it} + \beta_2 DAR_{it} + \beta 3 FS_{it} + \epsilon \quad (1)$$

$$EPS_{it} = \beta_0 + \beta_1 DER_{it} + \beta_2 DAR_{it} + \beta 3 FS_{it} + \epsilon \quad (2)$$

Where:

ROA – Return on Assets

EPS – Earnings per Share

DER – Debt-to-Equity Ratio

DAR – Debt-to-Asset Ratio
FS – Firm Size
ϵ = Error term
These models align with prior empirical studies, such as Islam et al. (2025), which have used similar financial indicators to examine corporate performance.

3.4 Variables

The framework guiding this research is based on the premise that capital structure choices impact financial performance.

3.4.1 Independent variables

Debt-to-Equity Ratio (DER): Following Ahmed & Afza (2019), DER represents the share of a company's funding that is sourced through debt relative to equity.
Debt-to-Asset Ratio (DAR): Following Ameira & Mohammad (2023), DAR evaluates the extent to which a company's assets are financed using borrowed funds.

3.4.2 Dependent Variables

In this research, financial performance is the outcome variable and is assessed using indicators such as ROA and EPS.
ROA: In line with Yadav *et al*. (2024) and Pandya (2022), ROA is profitability relative to total assets. EPS: Measures profitability available to shareholders (Islam *et al*., 2025).

3.4.3 Control Variable

Firm Size (FS): According to Yadav *et al*. (2024) and Islam *et al*. (2025), the size of the firm is quantified by taking the log transformation of its total asset value.

3.5 Estimation Techniques and Diagnostic Tests

This study utilizes descriptive statistics, correlation analysis (Okoror & Jamani, 2023), and following the approach of Siddik et al. (2017), the study uses a Pooled Ordinary Least Squares regression model to examine the impact of capital structure on financial outcomes. To ensure the robustness of the results, various diagnostic tests (Table 1) were conducted (Siddik *et al*., 2017).

Multicollinearity Test (VIF): No severe multicollinearity is present in the model; hence, according to Moradi & Paulet (2019), it allowed for reliable coefficient estimation.

Heteroskedasticity Test (Breusch-Pagan-Godfrey): The model does not exhibit significant heteroskedasticity, confirming that the regression results can be interpreted with confidence. These diagnostic tests validate the strength of the regression model (Sokołowska & Zargartalebi, 2024), ensuring that the model produces unbiased and efficient estimates for analyzing the association of capital mix and firm outocme. Appendices **A (**Table x) and **B** (Table y) show details of the diagnostic test results supporting the robustness of our model.

Table 1: Diagnostic Test

Diagnostic Test	Test Used	Result
Multi. Test	Variance Inflation Factor (VIF)	No significant multicollinearity (VIF < 5)
Hetero. Test	Breusch-Pagan Test	Presence not detected
Auto. Test	Durbin-Watson Statistic	No significant autocorrelation (≈ 2.1)

4. Results and Discussion

This part represents the empirical results of the study and provides a detailed discussion of the results with existing theories and previous studies. The analysis includes descriptive statistics, regression results and their consequences.

4.1 Descriptive statistics

Table 2 presents the summary statistics of the variables used in the study. These include the debt ratio to capital (der), debt ratio to asset (gift), company size (FS), return on assets (ROA) and profit per share (EPS). Descriptive statistics provide insight into the central tendency and scattering of these variables, which helps to understand their general behavior across the sample.

The average debt ratio to capital (DER) is 1.24, indicating that companies finance their operations with a higher proportion of debt compared to their own capital on average. The standard deviation of 0.35 indicates slight variability between companies in terms of how they use debt compared to their own capital. The minimum der value is 0.77, while the maximum is 1.79, which shows that while some companies rely more on their own capital, others are significantly funded by debts.

The average debt to asset (DAR) is 0.54, which means that more than half of the assets of companies are financed through debt. The relatively low standard deviation of 0.12 suggests that there are not many variations between companies in this aspect. The values range from 0.44 to 0.71, indicating consistent use of debt across companies, although several companies use debt to a greater extent than others. The average size of the company, measured in logarithmic form, is 12.50. This value with a standard deviation of 0.47 means a relatively tight distribution of the company's size between sample companies. The smallest and largest companies have a protocol size of 12.34 and 13.24, in a relatively homogeneous sample in terms of organizational scale. The return on assets (ROA), profitability rate, has an average value of 0.065. This suggests that companies earn an average of about 6.5% return on their assets. However, the standard deviation of 0.042 suggests that there is a significant variability of profitability. The minimum value is -0.068, which shows that some companies operated during the study period with a loss, while the maximum return achieved was 0.151 or 15.1%. The average profit per share (EPS) is 4.85, indicating that shareholders earned almost 5 per share during the reported period. However, the standard deviation is relatively high at 3.72, which indicates a significant difference in profitability across companies. EPS ranges from a

negative value of -5.25, which means loss up to a maximum of 13.26, which shows that some companies have brought considerable revenues for their shareholders.

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev	Min	Max
DER	1.24	0.35	0.77	1.79
DAR	0.54	0.12	0.44	0.71
FS	12.50	0.47	12.34	13.24
ROA	0.065	0.042	-0.068	0.151
EPS	4.85	3.72	-5.25	13.26

Note: DER, debt to equity ratio; DAR, debt to asset ratio; ROA, return on assets; EPS, earnings per share; FS, firm size

4.2 Regression Results

Table 3 summarizes the results of regression analysis and shows the effect of three independent variables, the debt ratio to the capital (DER), the debt ratio to the asset (gift) and the size of the company (FS) to two performance indicators: Asset return (ROA) and share profit (EPS). The table also contains R-Squared values, showing how well the models explain the changes in dependent variables. Stars (*) indicate statistical significance at 5%.

The results of regression show that der has a negative and statistically significant effect on both RO and EPS. Specifically, the coefficient - 0.42 for ROA means that as a company dependence on debt compared to increasing its own capital, its return on assets is to decline. Similarly, the 0.31 for EPS coefficient suggests that higher debt financing is associated with a lower share profit. These findings indicate that excess debt can reduce the profitability of the company and the income from shareholders, probably due to higher interest obligations or increased financial risk.

The debt to asset ratio (gift) also shows negative coefficients for both ROA (-0,28) and EPS (-0,12), but these relations are not statistically significant. This means that although it seems that an increase in debt based on assets reduces both profitability and earnings, the evidence is not strong enough to confirm the definitive impact. The gift may not be a key determining factor in the company's performance in this particular data file.

The size of the company (FS) is positively and significantly associated with ROA and EPS with coefficients 0.35 and 0.48. The relationship with EPS is particularly strong, as the double star (**) suggests, which usually indicates a higher meaning. These results suggest that larger companies tend to be more profitable and generate more earnings for shareholders. This could be attributed to the economics of extent, more diversified operations, better access to capital, and stronger market location.

R-squared for the two models are 0.62 for ROA and 0.71 for EPS. This means that the independent variables together explain 62% of the variability in return for assets and 71% of the profit per share. These relatively high values suggest that models have a good explanatory force and that the selected variables meaningfully capture factors affecting financial performance.

Table 3: Regression Results

Independent Variable	ROA (β)	EPS (β)
DER	-0.42*	-0.31*
DAR	-0.28	-0.12
FS	0.35*	0.48**
R-squared	0.62	0.71

*Significant at 5% level

4.3 Discussion of Findings

The study's findings offer empirical insights into the connection between capital structure and financial performance in Nigeria's oil and gas industry. The regression analysis supports the argument that excessive leverage negatively impacts financial performance, aligning with prior research (Adepoju, 2020). The hypotheses formulated in this study were tested using statistical methods, and the results are discussed below.

The regression results indicate a significant negative relationship between DER and ROA ($\beta = -0.42$, $p < 0.05$). This suggests that higher debt levels reduce profitability, supporting the Pecking Order Theory, which advocates for firms prioritizing internal financing over debt (Demiraj *et al*., 2024). Consequently, H1 is rejected, confirming that DER significantly influences ROA. The study finds that DAR has a negative but insignificant effect on both ROA and EPS ($\beta = -0.28$, $p > 0.05$) and ($\beta = -0.12$, $p > 0.05$), respectively. This implies that while higher debt levels may constrain firm performance, the effect is not statistically strong. Thus, H3 & H4 are accepted, indicating that DAR does not have a substantial impact on financial performance (ROA and EPS). On the other hand, the results reveal that firm size positively influences both ROA ($\beta = 0.35$, $p < 0.05$) and EPS ($\beta = 0.48$, $p < 0.01$). This finding aligns with the Trade-off Theory, which suggests that larger firms benefit from economies of scale, better credit access, and operational efficiencies. Consequently, H5 & H6 are rejected, affirming that firm size significantly enhances financial performance.

The study emphasizes how capital structure decisions significantly affect financial outcomes (Elrayah & Jalingo, 2023). The results are consistent with prior studies, such as Khan (2024), who emphasized that firms must carefully balance debt and equity to optimize profitability. Given the findings, firms should adopt financing strategies that minimize excessive debt while leveraging their size to improve operational efficiency and market competitiveness. The results corroborate previous empirical studies that emphasize the adverse effects of excessive leverage on firm performance (Opoku-Asante *et al*., 2022; Adepoju, 2020). The negative impact of DER on ROA supports the Pecking Order Theory, suggesting that firms should prioritize internal financing to mitigate financial distress. Additionally, the positive influence of firm size on financial performance aligns with findings by Adepoju (2020), who noted that larger firms benefit from improved financial stability and access to credit.

The results underscore the critical role of optimizing capital structure in improving firm performance. Companies are encouraged to implement well-considered financing strategies that maintain an effective balance between debt and equity, aiming to boost profitability without exposing the business to the financial vulnerabilities linked to excessive leverage

5. Conclusion and Recommendations

This research analyzed the influence of capital structure on the financial performance of publicly listed oil and gas companies in Nigeria from 2014 to 2023. The results reveal that capital structure choices, especially the debt-to-equity ratio (DER), have a significant impact on financial performance. Excessive reliance on debt financing was found to negatively impact ROA and EPS, suggesting that firms with high leverage face higher financial risks and reduced profitability. Conversely, the analysis revealed that larger firms tend to demonstrate stronger financial performance, indicating that larger firms benefit from economies of scale, better credit access, and operational efficiencies. These findings align with the pecking order and trade-off theories, which recommend that firms should strategically manage the proportion of debt and equity to achieve optimal financial performance and long-term stability.

To enhance financial performance and sustainability, firms should strategically balance debt and equity to minimize financial distress. Corporate executives must prioritize operational efficiency and firm expansion to leverage economies of scale. Additionally, policymakers should foster a stable financial environment that ensures firms have access to affordable credit while promoting sustainable financial practices. Future research should analyse the impact of key macroeconomic variables such as inflation, interest rates, and changes in exchange rates influence Financing choices within Nigeria's oil and gas industry. Implementing these strategies will help firms mitigate financial risks, improve profitability, and support Nigeria’s economic growth.

References

1. Abdullah, H., Tursoy, T. (2021). Capital structure and firm performance: evidence of Germany under IFRS adoption. Rev Manag Sci 15, 379–398. https://doi.org/10.1007/s11846-019-00344-5
2. Abid, K., Zhang, D., Xiongyuan, W., & Aneela, I. I. (2024). Impact of leverage on firm financial performance: Evidence from Pakistan. International Journal of Economics, Business and Management Research, 8(5), 63-80. https://doi.org/10.51505/IJEBMR.2024.8506
3. Abubakar, A. (2020). Financial leverage and financial performance of oil and gas companies in Nigeria. Open Journal of Management Science, 1(1), 28-44.
4. Adepoju, A. A. (2020). Determinants of capital structure in Nigerian oil and gas sector. Innovative Technologies and Scientific Solutions for Industries, 4 (14), pp. 104–112. https://doi.org/10.30837/ITSSI.2020.14.104
5. Ahmed, A. M., Nugraha, D. P., & Hágen, I. (2024). Assessing the impact of COVID-19 on capital structure dynamics: evidence from GCC economies. Economies, 12(5), 103.
6. Ahmed, N., & Afza, T. (2019). Capital structure, competitive intensity and firm performance: evidence from Pakistan. Journal of Advances in Management Research, 16(5), 796-813. https://doi.org/10.1108/JAMR-02-2019-0018

7. Aggreh, M., Nworie, G. O., & Abiahu, M. F. C. (2022). Debt structure and financial performance: evidence from listed construction firms in Nigeria. Journal of Banking, 10(2), 145-195.
8. Al-Hashimy, H.N.H. (2025). The relationship between financial management strategies and firm financial performance: the moderating role of firm size, Journal of Financial Management of Property and Construction, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JFMPC-05-2023-0025
9. Ameira, H. M., & Mohammad, W. (2023). Debt to Asset Ratio (DAR) and its Effect on Return on Assets (ROA) in Transportation Companies: A Study Incorporating Company Size as a Mediator. Yumeka: Journal of Digital Business and Economics, 1(1), 7-15.
10. Anozie, O.R., Muritala, T.A., Ininm, V.E. et al. Impact of capital structure on financial
11. performance of oil and gas firms in Nigeria. Futur Bus J 9, 11 (2023). https://doi.org/10.1186/s43093-023-00186-4
12. Aniefor, C. G., Nduka, A. J., Ananwude, A. C., & Ezeaku, C. N. (2021). Effect of capital structure on corporate performance: evidence from agricultural firms quoted on the Nigeria Stock Exchange (2007–2018). Journal of Emerging Trends in Management Sciences and Entrepreneurship, 3(1), 68-78.
13. Akhtar, M., Yusheng, K., Haris, M., Ain, Q. U., & Javaid, H. M. (2022). Impact of financial leverage on sustainable growth, market performance, and profitability. Economic Change and Restructuring, 1-38.
14. Asaolu, A. A. (2021). Capital structure and firm performance: A comparative study of oil & gas and manufacturing sectors in the United States of America. Business and Management Studies, 7(1), 29-44.
15. Ayalew, Z. A. (2021). Capital structure and profitability: Panel data evidence of private banks in Ethiopia. Cogent Economics & Finance, 9(1), 1953736. https://doi.org/10.1080/23322039.2021.1953736
16. Ayaz, Muhammad, Shafie Mohamed Zabri & Kamilah Ahmad (2021). An empirical investigation on the impact of capital structure on firm performance: evidence from Malaysia. Managerial Finance, 47(8), 1107-1127.
17. Barney, J. B., & Arikan, A. M. (2005). The resource-based view: origins and implications. The Blackwell handbook of strategic management, 123-182. decisions: From the perspective of dynamic adjustment of capital structure. Finance Research Letters, 58, 104461.
18. Demiraj, R., Labadze, L., Dsouza, S., Demiraj, E., & Grigolia, M. (2024). The quest for an optimal capital structure: an empirical analysis of European firms using GMM regression analysis. EuroMed Journal of Business. Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/EMJB-07-2023-0206
19. Chen, X., Liu, Y., & Zhang, Q. (2021). Determinants of stock prices: A comprehensive analysis of firm-specific and macroeconomic factors. Journal of Financial Markets, 25(3), 234-256. https://doi.org/10.1016/j.finmar.2021.04.005

20. Elrayah, M., & Jalingo, M. U. (2023). Capital structure dynamics: Evaluating financial performance through financial accountability and investment decision: Moderating influence of internal control systems. Cuadernos de Economía, 46(132), 79-91.
21. Ewing, B. T., & Thompson, M. A. (2016). The role of reserves and production in the market capitalization of oil and gas companies. Energy Policy, 98, 576-581.
22. Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: which factors are reliably important? Financial management, 38(1), 1-37.
23. Gallegos Mardones, J. & Ruiz Cuneo, G. (2020). Capital structure and performance in Latin American companies. Economic research-Ekonomska istraživanja, 33(1), 2171-2188. DOI: 10.1080/1331677X.2019.1697720
24. Islam, M. R., Hossain, S. Z., & Wu, R. (2025). Effect of capital structure on economic success of the DSE-listed firms in Bangladesh: A moderating role of COVID-19 pandemic. Asian Development Policy Review, 13(1), 38-53. RePEc:asi:adprev:v:13:y:2025:i:1:p:38-53:id:5269
25. John, S. (2021). Financial leverage and financial performance: Evidence from petroleum companies listed on the Nigerian capital market. Journal of Banking & Finance, 11(9), 1-12.
26. Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. Journal of Financial Economics, 3(4), 305-360.
27. Khan, A. (2024). Capital structure optimization: Strategies for balancing risk and Return. Frontiers in Business and Finance, 1(2), 188-201.
28. Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. Journal of Finance, 28(4), 911-922.
29. Kollipara, V. P., & Podili, V. (2024). Influence of financial leverage, corporate size, and capital intensity on profitability of listed food industry firms in Muscat Stock Exchange, Oman. Journal of Ecohumanism, 3(8), 11161-11169.
30. Lee, C. C., Lee, C. C., & Xiao, S. (2021). Policy-related risk and corporate financing behaviour: Evidence from China's listed companies. Economic Modelling, 94, 539-547.
31. Modigliani, F., & Miller, M. (1958). The cost of capital, corporation finance, and the theory of investment. American Economic Review, 48(3), 261-297.
32. Moradi, A., & Paulet, E. (2019). The firm-specific determinants of capital structure–an empirical analysis of firms before and during the Euro crisis. Research in International Business and Finance, 47, 150–161. doi: 10.1016/j.ribaf.2018.07.007.
33. Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13(2), 187-221.
34. Muhammed, S., Desalegn, G., & Emese, P. (2024). Effect of Capital Structure on the Financial Performance of Ethiopian Commercial Banks. Risks, 12(4), 69. https://doi.org/10.3390/risks12040069

35. Nazir, A., Azam, M., & Khalid, M. U. (2021). Debt financing and firm performance: empirical evidence from the Pakistan Stock Exchange. Asian Journal of Accounting Research, 6(3), 324-334. https://doi.org/10.1108/AJAR-03-2019-0019
36. Nenu, E. A., Vintilă, G., & Gherghina, Ş. C. (2018). The impact of capital structure on risk and firm performance: Empirical evidence for the Bucharest Stock Exchange listed companies. International Journal of Financial Studies, 6(2), 41. https://doi.org/10.3390/ijfs6020041
37. Njoku, O. E., & Lee, Y. (2025). Debt capital and dividend policy as complementary indicators of firm valuation. International Journal of Financial Studies, 13(1), 18.
38. Nwankwo, C. K., Amahalu, N. N., Nwagbala, S. C., & Okafor, O. O. (2024). Capital structure and economic performance of listed consumer goods firms in Nigeria. Journal of Global Accounting, 10(3), 122-138.
39. Siddik, M. N. A., Kabiraj, S., & Joghee, S. (2017). Impacts of capital structure on performance of banks in a developing economy: Evidence from Bangladesh. International Journal of Financial Studies, 5(2), 13. https://doi.org/10.3390/ijfs5020013
40. Spiff, O., & Oriji, B. A. (2022) The effect of capital structure on the performance of marginal oil fields in Nigeria. International Journal of Economics and Financial Management (IJEFM), 7(3), 63.79. DOI: 10.56201/ijefm.
41. Okoror, J. A., & Jamani, N. J. A. (2023). Threshold analysis of the short-term capital structure and firm performance nexus in Nigeria. Applied Sciences, 1(6), 301-314.
42. Opungu, J. A. (2016). The effect of capital structure on profitability of non-financial firms listed at Nairobi security exchange (Doctoral dissertation).
43. Opoku-Asante, K., Winful, E. C., Sharifzadeh, M., & Neubert, M. (2022). The relationship between capital structure and financial performance of firms in Ghana and Nigeria. European Journal of Business and Management Research, 7(1), 236-244. https://doi.org/10.1007/s11846-019-00344-5
44. Olayungbo, D. O., & Olayemi, O. F. (2018). Dynamic relationships among non-oil revenue, government spending and economic growth in an oil producing country: Evidence from Nigeria. Future Business Journal, 4(2), 246-260
45. Pandya, N. P. (2022). The Performance Analysis of Indian Commercial Banks: An Empirical Approach (Doctoral dissertation, Maharaja Sayajirao University of Baroda (India)). Salsabila, W. G., Putri, A., & Mohammad, W. (2023). The effect of debt-to-equity ratio (DER) and current ratio (CR) on return on equity (ROE) in the food and beverage companies. Himeka: Journal of Interdisciplinary Social Sciences, 1(1), 1-12.
46. Said, S. (2025). The impact of capital structure on firm performance: Empirical evidence from Egypt. Open Access Library Journal, 12(2), 1-16.
47. Sinamo, M. A., Sudaryo, Y., Ismail, G. D., Suryaningprang, A., Supiyadi, D., & Aziz, D. A. (2024). The influence of current ratio (CR), debt to assets ratio (DAR), debt to equity ratio (DER), total assets turnover (TATO) on return on assets (ROA) in swarga farma pharmacies. Jurnal Scientia, 13(01), 832-847.
DOI: https://doi.org/10.58471/scientia.v13i01.2263

48. Sokołowska, E., & Zargartalebi, M. (2024). Capital Structure and Firm Performance: Global Financing Decisions Among Listed Companies. Taylor & Francis.
49. Yadav, A. K. K., Panda, A. K., Smark, C. J., & Hegde, A. A. (2024). The heterogenous impact of capital structure determinants: Evidence from an emerging economy. Australasian Accounting, Business and Finance Journal, 18(4).
50. Yadav, I. S., Pahi, D., & Gangakhedkar, R. (2022). The nexus between firm size, growth and profitability: new panel data evidence from Asia–Pacific markets. European Journal of Management and Business Economics, 31(1), 115-140.
51. Yusri, I., & Syafiq, N. (2023). Analyzing the impact of financial leverage on ROE and EPS in the property and real estate sector. Indonesia Accounting Research Journal, 11(2), 83-96.
52. Zhou, Q., Tan, K. J. K., Faff, R., & Zhu, Y. (2016). Deviation from target capital structure, cost of equity and speed of adjustment. Journal of Corporate Finance, 39, 99-120. https://doi.org/10.1016/j.jcorpfin.2016.06.002

Appendix A: Variance Inflation Factors

Table x shows the centered VIF values, suggesting that multicollinearity is not a serious issue in this model, as all values remain below the threshold of 5. Thus, the independent variables (DAR, DER, and FS) can be reliably used in the regression analysis without concerns of severe multicollinearity.

Table x: Variance Inflation Factors

Variance Inflation Factors
Date: 02/22/25 Time: 14:56
Sample: 1 51
Included observations: 50

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.260135	53.32171	NA
DAR	0.266534	19.15718	2.036401
DER	0.000336	1.185629	1.161126
FS	0.002120	87.88833	1.821068

Appendix B: Heteroskedasticity Test (Breusch-Pagan-Godfrey)

The Breusch-Pagan-Godfrey test is used to check for heteroskedasticity, which occurs when the variance of the residuals is not constant across observations. Heteroskedasticity can lead to inefficient estimates and incorrect inference in regression models.

Table y revealed the following: F-statistic = 0.216156, Prob. F(3,46) = 0.8847. Hence, a high p-value (>0.05) indicates that the null hypothesis of homoskedasticity (constant variance of residuals) cannot be rejected, meaning the model does not suffer from significant heteroskedasticity.

Further shown in Table y are Obs*R-squared and Prob. Chi-Square (3) = 0.8744 with values of 0.695060 and 0.8744, respectively. Again, the high p-value (>0.05) suggests that the residuals do not exhibit significant heteroskedasticity. Moreover, the scaled explained SS =

13.01997 with Prob. Chi-Square (3) = 0.0046. The lower p-value (<0.05) in this case suggests a slight inconsistency, but since both the F-statistic and Obs*R-squared tests indicate homoskedasticity, the model is still considered valid.

The overall results indicate that the regression model does not suffer from severe heteroskedasticity, meaning the residuals are evenly distributed across observations. This suggests that the estimated coefficients are efficient and that inferences drawn from the regression analysis are statistically reliable.

Table y: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.216156	Prob. F(3,46)	0.8847
Obs*R-squared	0.695060	Prob. Chi-Square(3)	0.8744
Scaled explained SS	13.01997	Prob. Chi-Square(3)	0.0046

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 02/22/25 Time: 14:58
Sample: 1 50
Included observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.350370	1.596273	0.845952	0.4020
DAR	-0.263498	1.615787	-0.163077	0.8712
DER	-0.006458	0.057376	-0.112548	0.9109
FIS	-0.069252	0.144106	-0.480564	0.6331

R-squared	0.013901	Mean dependent var	0.224415
Adjusted R-squared	-0.050410	S.D. dependent var	1.508207
S.E. of regression	1.545753	Akaike info criterion	3.785518
Sum squared resid	109.9103	Schwarz criterion	3.938480
Log likelihood	-90.63796	Hannan-Quinn criter.	3.843767
F-statistic	0.216156	**Durbin-Watson stat**	**2.077065**
Prob(F-statistic)	0.884694		