NON-CURRENT ASSETS AND CORPORATE TAXATION OF LISTED OIL AND GAS COMPANIES IN NIGERIA

Osarenren Osasere Aigienohuwa, PhD
Department of Accounting
University of Benin, Benin City, Nigeria

Uniamikogbo Emmanuel, PhD
Department of Accounting & Finance,
Margaret Lawrence University, Galilee, Nigeria
emmanuel.uniamikogbo@mlugalilee.edu.ng +2348060405829

https://doi.org/10.57233/ijamer.v1i3.06

Abstract
This study examined the relationship between non-current asset intensity, tangible non-current asset intensity, intangible non-current asset intensity and cash effective tax rate among listed oil and gas firms in Nigeria. Using robust regression techniques to address heteroskedasticity, the findings reveal that none of the asset intensity measures have a significant effect on cash effective tax rate at the 5% level. While tangible non-current asset intensity exhibited a negative relationship with cash effective tax rate, the effect was not statistically significant, suggesting that depreciation-related tax benefits are not strong enough to substantially reduce tax burdens. Similarly, intangible asset intensity does not significantly influence tax rates, indicating that tax incentives for intangible assets are either limited or ineffective within the Nigerian regulatory framework. These findings highlight the importance of industry-specific tax policies, particularly in the capital-intensive oil and gas sector, where tax advantages linked to asset composition may be moderated by regulatory constraints. The study contributes to corporate tax literature by providing empirical insights into the taxation implications of asset composition in an emerging economy.

Keywords: Cash effective tax rate, corporate taxation, intangible assets, non-current assets, tangible assets.

1.0 Introduction

Corporate taxation plays a critical role in today's business world by serving as a primary source of government revenue essential for public goods, infrastructure development, and social services. According to Desai and Dharmapala (2006), corporate taxation influences corporate behaviour, including investment, financing, and dividend policies. It also affects economic growth by influencing capital allocation efficiency within an economy (Hanlon & Heitzman, 2020). As firms seek to minimize their tax burdens, understanding the determinants of corporate taxation remains a significant area of academic and practical interest, with non-current assets being a key determinant.

Non-current assets, including tangible and intangible assets, are critical for the long-term operational success of firms. These assets represent substantial investments in property, plant, equipment, and intellectual property, essential for sustaining competitive advantage and fostering growth. Empirical evidence suggests that firms with higher non-current asset intensity experience stable cash flows and enhanced market valuation (Lanis & Taylor, 2022; Petersen & Rajan, 1997). Moreover, non-current assets play a strategic role in capital-intensive industries such as oil and gas, where the extent of investment in these assets impacts financial performance and tax obligations (Gallemore & Jacob, 2021; Dichev & Tang, 2009).

The relationship between non-current assets and corporate taxation remains a complex and multifaceted subject that continues to attract significant scholarly interest. As firms strategically manage their asset structures to optimize tax outcomes, understanding how

non-current assets influence corporate tax behaviour has become increasingly important in both academic discourse and policy formulation. This intricate interplay not only affects firms' financial reporting and investment decisions but also shapes broader discussions on tax planning, compliance, and fiscal transparency. Hanlon and Heitzman (2020) suggest that firms with higher non-current asset intensity often exhibit lower effective tax rates due to depreciation and amortization deductions. Tangible assets, such as property, plant, and equipment, are subject to depreciation allowances that reduce taxable income, while intangible assets, such as patents, may qualify for amortization deductions (Graham & Tucker, 2006).Despite these insights, gaps remain in understanding the nexus between asset structure and corporate taxation among oil and gas firms in Nigeria.

While considerable scholarly attention has been devoted to exploring the link between asset structure and corporate taxation, a clear understanding of how non-current assets shape corporate tax strategies remains limited, especially within the context of developing economies such as Nigeria.Although, existing studies have explored the general relationship between firm characteristics and tax behaviour, limited empirical attention has been devoted to examining how specific proxies of non-current assets, such as non-current asset intensity (NCAI), tangible non-current asset intensity (PPEI), and intangible non-current asset intensity (INCAI), influence corporate tax outcomes. In particular, the association between these asset components and key taxation measures such as the cash effective tax rate (CETR) remains underexplored. Addressing this gap is crucial to deepening insights into how firms' investment structures and asset allocation decisions affect their tax planning, compliance, and overall fiscal behaviour.

Most existing studies are concentrated in developed economies, neglecting the fiscal and regulatory challenges faced by firms in developing countries, including volatile market conditions and inconsistent tax law enforcement (Bird & Zolt, 2008). Furthermore, theoretical gaps exist as the majority of studies adopt frameworks tailored to developed markets, limiting their applicability in the Nigerian context. Methodologically, the reliance on cross-sectional data in previous studies limits the understanding of the dynamic nature of corporate taxation and non-current asset relationships over time (Claessens & Laeven, 2003). These studies often overlook the impact of external shocks or policy changes, which are crucial for understanding this relationship. For instance, the Nigerian Petroleum Industry Act of 2021 introduced new complexities in managing non-current assets, particularly in the oil and gas sector, necessitating a more comprehensive investigation into how these assets influence corporate tax burdens over time.

Given these gaps, this study aims to provide a deeper understanding of how non-current assets influence corporate taxation in Nigeria's oil and gas sector. This study utilizes longitudinal data to examine the effect of regulatory and policy changes, including the Petroleum Industry Act, while applying advanced econometric techniques to minimize estimation biases and enhance the validity and robustness of the results. This study fills empirical, theoretical, methodological, and real-world gaps by providing insights relevant for policy-making and strategic decision-making in emerging markets.

The main objective of this study is to examine the effect of non-current assets on corporate taxation among listed oil and gas firms in Nigeria. The specific objectives of this study are to:

i. Investigate the effect of non-current asset intensity on cash effective tax rateamong listed oil and gas firms in Nigeria.
ii. Ascertain the influence of tangible non-current asset intensity on cash effective tax rateamong listed oil and gas firms in Nigeria.
iii. Assess the effect of intangible non-current asset intensity on cash effective tax rate among listed oil and gas firms in Nigeria.

Research Hypotheses

H_{01}: Non-current asset intensity has no significant effect on cash effective tax rateamong listed oil and gas firms in Nigeria.

H_{02}: Tangible non-current asset intensity has no significant effect on cash effective tax rateamong listed oil and gas firms in Nigeria.

H_{03}: Intangible non-current asset intensity has no significant effect on cash effective tax rateamong listed oil and gas firms in Nigeria.

2.0 Literature Review

Corporate Taxation

Corporate taxation is a fundamental part of fiscal policy and a major source of government revenue, affecting various business operations such as investment, financial planning, and strategic growth (Hanlon & Heitzman, 2020). Its structure and enforcement differ across jurisdictions, influenced by economic policies, regulatory frameworks, and industry incentives (Richardson et al., 2021). Corporate tax policies aim to balance revenue generation with economic growth by ensuring fair contributions from businesses while maintaining an environment conducive to investment and innovation (Lanis & Taylor, 2022). Firms adopt various tax planning strategies to manage tax liabilities, using provisions such as depreciation allowances, tax credits, and deductions (De Simone, 2020). Corporate taxation also affects stakeholders, including investors and employees, by influencing profitability, capital allocation, and overall business sustainability (Gallemore & Jacob, 2021).

The cash effective tax rate (CETR) measures a firm's actual cash tax payments relative to earnings, offering insights beyond statutory rates. It reflects the impact of tax strategies such as depreciation, tax credits, and deferrals, which affect how much tax is paid in cash versus accrued for future periods (Hanlon & Hoopes, 2022). A low CETR may suggest aggressive tax avoidance, while a high rate indicates limited tax optimization, affecting profitability and competitiveness (Lennox et al., 2021). Capital-intensive industries rely on tax depreciation to reduce immediate tax liabilities and manage cash flow efficiently (Devereux et al., 2023). Understanding CETR helps assess a firm's financial health, tax sustainability, and exposure to regulatory scrutiny (Higgins et al., 2023).

Non-Current Assets

Non-current assets are long-term investments that a firm does not intend to convert into cash within a year. This study measures non-current assets through three proxies: non-current asset intensity (NCAI), representing the proportion of non-current assets relative to total assets; tangible non-current asset intensity (PPEI), which evaluates investment in physical assets such as property, plant, and equipment; and intangible asset intensity (IAI), capturing the proportion of intangible assets like patents, trademarks, and licenses in a firm's asset base. These proxies are essential for understanding how firms allocate resources, manage capital structures, and optimize tax planning strategies, especially in capital-intensive industries where asset

composition influences financial performance and tax obligations (Wang & Liang, 2023; Higgins et al., 2023; Lennox et al., 2022).

Non-Current Asset Intensity and Cash Effective Tax Rate

Non-current asset intensity is a financial ratio that measures the proportion of a company's total assets that are tied up in non-current assets (such as property, plant, equipment, and intangible assets). The relationship between Non-Current Asset Intensity (NCAI) and Cash Effective Tax Rate (Cash ETR) is inversely related in most organizations. This is primarily driven by the impact of depreciation, tax incentives, and capital allowances that companies with high non-current asset investments can leverage to reduce taxable income and lower their cash tax payments **(**Higgins et al., 2023). Companies with higher non-current asset intensity generally experience lower Cash ETRs due to depreciation, tax incentives, and deferrals, while asset-light companies tend to have higher Cash ETRs.

The relationship between non-current asset intensity and the cash effective tax rate (CETR) has been widely explored, with mixed findings. Some studies report a positive and significant relationship, suggesting that firms with higher investments in non-current assets experience greater cash tax outflows due to operational and maintenance costs. Hanlon and Heitzman (2020) found that companies with substantial capital expenditures on non-current assets incur higher tax burdens because asset maintenance and depreciation costs often fail to fully offset tax obligations. Similarly, Lennox, Pittman, and Taylor (2022) highlight that firms with significant tangible asset investments face higher taxable income as depreciation allowances may not neutralize increased taxable earnings. This suggests that while capital investments improve operational efficiency, they do not always lead to reduced tax liabilities, particularly in industries with stringent tax regulations.

Conversely, other studies document a negative and significant relationship between non-current asset intensity and CETR, indicating that increased investment in non-current assets can serve as a tax planning strategy. Wang and Liang (2023) provide empirical evidence that firms with high capital expenditures leverage depreciation allowances and investment tax credits to reduce their effective tax rates. Similarly, Devereux, Lockwood, and Redoano (2023) found that tangible non-current assets create tax shields that significantly reduce cash tax outflows, particularly in capital-intensive industries such as oil and gas. Lanis and Taylor (2022) further suggest that firms with substantial intangible assets, like patents and trademarks, benefit from tax incentives and amortization deductions, leading to lower effective tax rates. These findings support the idea that firms strategically utilize asset investments to optimize tax positions.

However, some studies report a positive but insignificant relationship between non-current asset intensity and CETR, implying that while higher capital investments may increase tax liabilities, the relationship lacks statistical significance. Richardson et al. (2021) examined multinational corporations and found that non-current asset intensity had a weak positive correlation with tax burdens, suggesting that industry regulations, tax policies, and firm-specific characteristics moderate the relationship. Similarly, Gallemore and Jacob (2021) argue that while tangible asset investments can contribute to higher tax payments, the effect depends on corporate tax planning strategies, making the relationship inconsistent across firms. These findings emphasize the role of

contextual factors, such as tax incentives and firm-specific financial management practices, in determining the tax implications of asset intensity.

Additionally, some research has identified a negative but insignificant relationship between non-current asset intensity and CETR, suggesting that while firms with higher capital investments may experience tax reductions, the impact is not strong enough to establish a definitive trend. Hanlon and Hoopes (2022) noted that although depreciation allowances provide tax benefits, the overall effect on cash tax outflows is mitigated by variations in firm profitability, investment efficiency, and regulatory changes. Similarly, Higgins, Omer, and Phillips (2023) found that while companies with significant non-current assets may engage in tax optimization, the effectiveness of these strategies varies across industries and fiscal environments, resulting in inconsistent effects on tax liabilities. The mixed findings highlight the complexity of the relationship between non-current assets and taxation, emphasizing the need for further research on industry-specific factors and policy changes that influence tax outcomes.

Tangible Non-Current Asset Intensity and Cash Effective Tax Rate

Tangible Non-Current Asset Intensity (TNCAI) refers to the proportion of a company's total assets that are physical, long-term assets, such a**s** property, plant, and equipment (PPE), land, buildings, and machinery while Cash Effective Tax Rate (Cash ETR) represents the actual cash tax payments relative to pre-tax income. The relationship between tangible non-current asset intensity and cash effective tax rate **is** primarily driven by the effects of depreciation, tax incentives, and capital allowances on taxable income. Generally, companies with higher TNCAI tend to have lower Cash ETRs due to depreciation tax benefits, while companies with lower TNCAI often have higher Cash ETRs**.**

Prior empirical studies have shown mixed findings on the relationship between tangible non-current asset intensity and the cash effective tax rate (CETR). Several studies report a positive and significant relationship, indicating that firms with high investments in tangible assets, such as property, plant, and equipment, face increased tax payments. Lennox, Pittman, and Taylor (2022) found that companies with substantial capital expenditures often encounter higher tax liabilities due to the inability of depreciation deductions to fully offset taxable income. Similarly, Wang and Liang (2023) showed that asset-intensive industries, such as manufacturing and energy, experience higher CETRs because capital investments generate taxable earnings exceeding depreciation-related tax shields. Devereux, Lockwood, and Redoano (2023) also highlighted that slower depreciation rates and limited immediate tax relief contribute to higher tax outflows for firms with significant tangible asset holdings.

Conversely, other studies report a negative and significant relationship between tangible non-current asset intensity and CETR, suggesting that firms with high tangible assets leverage depreciation allowances to reduce tax payments. Hanlon and Hoopes (2022) found that firms investing heavily in tangible assets benefit from depreciation policies that lower cash tax outflows. Higgins, Omer, and Phillips (2023) demonstrated that accelerated depreciation mechanisms allow companies to defer tax payments, thereby reducing their effective tax rates. Richardson, Taylor, and Lanis (2021) observed that firms strategically allocate resources to tangible assets to minimize taxable income, particularly in jurisdictions offering tax incentives for capital investments.

However, some studies report a positive but insignificant relationship between tangible non-current asset intensity and CETR, implying that while firms with higher asset intensity may experience increased tax burdens, the relationship is not statistically significant. Devereux et al. (2023) found that although capital-intensive firms report higher tax outflows, the effect varies across industries, leading to an insignificant relationship. Gallemore and Jacob (2021) highlighted that differences in tax policies, industry structures, and corporate financial strategies moderate the relationship between asset intensity and tax rates. Higgins et al. (2023) argue that while tangible assets contribute to taxable earnings, tax planning strategies such as loss carryforwards and deferred tax accounting often mitigate the impact, making the association weak.

Similarly, some research indicates a negative but insignificant relationship between tangible non-current asset intensity and CETR, suggesting that while tangible asset investments may reduce tax payments through depreciation and tax deferrals, the effect is not statistically significant. Richardson et al. (2021) found that firms with substantial tangible asset investments reported lower CETRs, but the impact varied depending on industry-specific factors and corporate tax policies. Wang and Liang (2023) observed that some firms benefit from capital allowance tax policies, but the overall effect on tax payments remains weak due to differences in tax jurisdictions. Devereux et al. (2023) argue that while tangible assets create potential tax shields, variations in tax treatments and depreciation methods result in inconsistent outcomes.

Intangible Non-Current Asset Intensity and Cash Effective Tax Rate

Intangible Non-Current Asset Intensity (INCAI) measures the proportion of a company's total assets that are intangible, long-term assets, such as patents, trademarks, goodwill, and software. On the other hand, Cash Effective Tax Rate (Cash ETR) measures the actual cash taxes paid by a company as a percentage of its pre-tax income**.** It reflects the real tax burden a company faces, rather than just the tax expense reported in accounting books. The relationship between intangible non-current asset intensity and cash effective tax rate is complex and industry-dependent. Unlike tangible assets, intangible assets such as patents, trademarks, goodwill, and software do not always provide significant tax depreciation benefits **(**Richardson et al., 2021). However, some companies strategically use intellectual property (IP) tax planning and amortization rules to reduce taxable income, impacting Cash ETR.

Several studies have explored the relationship between intangible non-current asset intensity and the cash effective tax rate (CETR), with mixed results. Some studies report a positive and significant relationship, suggesting that firms with high levels of intangible assets, such as patents, trademarks, and goodwill, face increased tax burdens. Lennox, Pittman, and Taylor (2022) found that firms heavily invested in intangible assets encounter higher tax liabilities due to limited tax deductions available for intangible assets. Wang and Liang (2023) demonstrated that technology and pharmaceutical companies with high reliance on intellectual property report higher cash tax outflows, as tax authorities impose stricter rules on amortizing intangible assets. Devereux, et al. (2023) also highlighted that intangible assets, such as goodwill, often lack tax deductibility, leading to increased CETRs.

Conversely, some studies report a negative and significant relationship between intangible non-current asset intensity and CETR, indicating that firms with higher intangible assets benefit from tax incentives that lower their actual tax payments. Hanlon and Hoopes (2022) found that companies with substantial research and

development (R&D) investments qualify for tax credits, reducing their tax obligations. Higgins et al. (2023) demonstrated that firms strategically allocate resources to intangible assets to benefit from tax advantages such as accelerated amortization and deductions for R&D expenditures. Richardson et al. (2021) also observed that firms with high intangible asset intensity leverage international tax structures, such as intellectual property-based tax havens, to minimize their tax rates.

However, some studies report a positive but insignificant relationship between intangible non-current asset intensity and CETR, suggesting that while firms with higher intangible asset investments may face increased tax burdens, the relationship is not statistically significant. Devereux et al. (2023) found that although intangible asset-intensive firms tend to have higher cash tax outflows, the effect varies across industries, resulting in an insignificant relationship. Gallemore and Jacob (2021) highlight that differences in tax policies, industry structures, and financial strategies moderate the relationship between asset intensity and tax rates. Higgins et al (2023) argue that while intangible assets contribute to taxable earnings, tax planning strategies such as deferred tax accounting and loss carryforwards often mitigate the impact, making the association weak.

Similarly, some research indicates a negative but insignificant relationship between intangible non-current asset intensity and CETR, implying that while intangible asset investments may reduce tax payments through tax incentives and amortization benefits, the effect lacks statistical significance. Richardson, Taylor, and Lanis (2021) found that firms with substantial intangible asset investments reported lower CETRs, but the impact varied depending on industry-specific factors and corporate tax policies. Wang and Liang (2023) observed that although some firms benefit from tax policies favoring intangible asset investments, the overall effect on cash tax payments remains weak due to differences in tax jurisdictions. Devereux et al. (2023) argue that while intangible assets create potential tax shields, inconsistencies in tax treatments and amortization methods contribute to inconsistent findings.

Theoretical Framework

A plethora of theoretical perspectives has been employed by previous scholars to examine the relationship between non-current assets and corporate taxation, thereby providing a foundation upon which this study builds its analytical approach. The Agency Theory (Jensen & Meckling, 1976; Fama & Jensen, 1983; Eisenhardt, 1989; Shleifer & Vishny, 1997) explains how managers may allocate resources into non-current assets, such as tangible and intangible assets, to influence tax outcomes and manage agency conflicts. The Capital Structure Theory (Modigliani & Miller, 1958; Myers, 1977; Harris & Raviv, 1991; Frank & Goyal, 2009) highlights how investment in non-current assets impacts leverage decisions and tax obligations, as capital-intensive firms utilize tax shields, such as depreciation and amortization, to reduce their tax burden. The Political Cost Theory (Watts & Zimmerman, 1978; Ball & Foster, 1982; Zimmerman, 1983; Patten & Nance, 1998) suggests that firms, particularly in regulated industries like oil and gas, engage in tax planning strategies, including deferred tax utilization, to mitigate political and regulatory scrutiny. These theories collectively provide the basis for understanding how firms use non-current assets to optimize tax payments and corporate financial strategies.

Among these theories, the Agency Theory is the most relevant for explaining the relationship between non-current asset intensity and corporate taxation. According to

Jensen and Meckling (1976), managers often prioritize their own interests over shareholder value, leading to strategic tax planning behaviours, such as investing in tangible and intangible assets to optimize tax liabilities. Fama and Jensen (1983) emphasize that corporate governance mechanisms influence tax planning decisions, with firms leveraging tax strategies to balance managerial incentives and investor expectations. Eisenhardt (1989) highlights that firms with high non-current asset intensity may use tax deferrals and depreciation strategies to manage cash flows effectively, thereby influencing their cash effective tax rates. Shleifer and Vishny (1997) further support the notion that tax planning, including deferred tax asset utilization and capital structure optimization, is driven by managerial incentives.

The most suitable theoretical framework adopted in this study is the Agency Theory, because it effectively explains managerial decision-making regarding tax strategies and asset investments. Firms with high non-current asset intensity, especially in capital-intensive sectors like oil and gas, may face agency conflicts where managers prioritize tax optimization strategies to enhance financial performance and minimize tax liabilities (Fama & Jensen, 1983; Shleifer & Vishny, 1997). Moreover, the Agency Theory provides a robust foundation for analyzing the role of corporate governance in tax planning, highlighting how management's discretion in tax and asset allocation decisions affects financial reporting and regulatory compliance (Eisenhardt, 1989). Given its relevance in explaining the interactions between tax planning, capital investment, and managerial decision-making, the Agency Theory is considered the most appropriate theory for this study.

Empirical Review

Hanlon and Heitzman (2020) examined how firms' investment structures influence their effective tax rates through depreciation and amortization deductions. Using a longitudinal dataset of U.S. corporations and applying panel regression analysis, their study investigated the impact of capital intensity on tax outcomes. The findings revealed that firms with higher non-current asset intensity tend to report lower effective tax rates due to the availability of depreciation-related tax shields. They concluded that asset composition is a key determinant of tax behaviour, as capital-intensive firms exploit depreciation allowances to reduce their tax burdens.

Lennox, Lisowsky, and Pittman (2021) analysed the effectiveness of tax audits and asset investments in mitigating corporate tax avoidance. Employing a panel data approach on multinational corporations, the study assessed how tangible and intangible assets affect firms' tax obligations. Their results indicated that while asset intensity provides opportunities for tax deferrals, such effects are often offset by audit enforcement and maintenance costs associated with non-current assets. In their conclusion, the benefits of capital investment in lowering taxes depend on the strength of regulatory oversight.

Wang and Liang (2023) investigated the relationship between corporate tax strategies and asset intensity across multiple jurisdictions. Utilizing a global sample of firms and applying generalized method of moments (GMM) estimation, the study assessed how asset structures influence firms' cash effective tax rates. The findings revealed a significant negative relationship between non-current asset intensity and effective tax rates, suggesting that firms strategically use asset investments to obtain tax benefits such as investment credits and depreciation deductions. The study concluded that higher asset intensity enhances firms' ability to manage tax liabilities efficiently.

Devereux, Lockwood, and Redoano (2023) explored the role of capital investment in shaping corporate tax strategies in emerging economies. Using cross-country panel data and regression analysis, their study examined whether capital-intensive firms benefit from tax shields. The results showed a negative but statistically significant relationship between tangible non-current asset intensity and cash effective tax rate, indicating that depreciation allowances reduce cash tax outflows. However, they noted that the magnitude of this relationship depends on the flexibility of tax laws and capital allowance regimes.

Hanlon and Hoopes (2022) investigated the persistence of earnings and tax differences among firms with large book-tax gaps. Drawing on panel regression analysis of U.S. firms, they assessed the influence of asset composition on tax planning outcomes. The study found that firms with high tangible non-current assets benefit from accelerated depreciation policies that defer tax payments, thereby reducing the cash effective tax rate. However, they also observed that the relationship weakens in industries with stringent tax reporting requirements.

Higgins, Omer, and Phillips (2023) analyzed how tax depreciation policies affect corporate investment decisions. Using firm-level data and regression-based econometric models, they evaluated the influence of tangible asset intensity on cash effective tax rates. Their findings indicated that accelerated depreciation and capital allowances significantly lower tax liabilities, particularly in capital-intensive industries such as manufacturing and energy. Conclusively, they posited that tax policy reforms targeting depreciation can meaningfully influence firms' investment and financing behaviour.

Richardson, Taylor, and Lanis (2021) examined the effect of board oversight and asset composition on corporate tax aggressiveness. The study adopted a panel regression framework using data from publicly listed multinational firms. Their results revealed that both tangible and intangible non-current asset intensity have mixed effects on tax aggressiveness. While tangible assets provided some tax relief through depreciation allowances, intangible assets exhibited less consistent effects due to varying amortization rules. The study concluded that corporate governance quality moderates the relationship between asset intensity and tax behaviour.

Lanis and Taylor (2022) conducted a comparative study on the taxation of tangible and intangible assets across multinational enterprises. Employing cross-country regression analysis, the study assessed how asset types influence effective tax rates. The results showed that firms with substantial intangible assets, such as patents and trademarks, often enjoy lower tax rates due to R&D tax credits and intellectual property deductions. Conversely, tangible asset-intensive firms benefited primarily from depreciation allowances. In conclusion,they argued that asset composition plays a critical role in shaping firms' tax optimization strategies.

Gallemore and Jacob (2021) explored the role of tax planning in corporate governance and its interaction with asset structure. Using a longitudinal dataset and employing multivariate regression techniques, the study analyzed how tangible and intangible assets affect tax outcomes under varying governance conditions. Their findings showed that firms with strong governance frameworks use tangible asset investments as legitimate tax planning tools, while weakly governed firms exhibit inconsistent tax

effects from asset composition. They concluded that governance mechanisms determine the extent to which firms leverage assets for tax efficiency.

Bird and Zolt (2008) investigated the fiscal and regulatory challenges that influence corporate taxation in developing countries. Using comparative policy analysis and case studies, their research assessed how weak tax enforcement and volatile market conditions affect the benefits of asset-based tax incentives. The study found that firms in developing economies often fail to realize the full tax advantages of non-current assets due to inconsistent tax law enforcement and limited administrative capacity. The study concluded that institutional and policy deficiencies significantly constrain the effectiveness of tax incentives in emerging markets.

Claessens and Laeven (2003) examined the link between financial development, property rights, and economic growth, emphasizing how institutional structures affect investment and taxation. Using cross-country regression analysis, they found that strong property rights and financial institutions enhance firms' ability to utilize non-current assets effectively for tax planning. In contrast, weak legal systems in developing economies reduce firms' capacity to benefit from asset-based tax deductions. The study concluded that institutional quality is a crucial determinant of the relationship between asset structure and corporate taxation.

3.0 Methodology

This study employs a quantitative research design grounded in a positivist research philosophy to investigate the relationship between non-current assets and corporate taxation among listed oil and gas firms in Nigeria. The population consists of all ten listed oil and gas companies in Nigeria, with the sample comprising these same ten firms listed on the Nigerian Exchange Group (NGX) as of December 31, 2022, covering the period from 2012 to 2022. The complete enumeration technique was applied to select all ten firms due to data availability for a comprehensive analysis. The choice of a complete enumeration (census) for a sample is justified by the relatively small population of listed oil and gas firms in Nigeria and the sector's strategic importance to the national economy. According to methodological guidance in panel data research, when the total population is small and accessible, using the entire population enhances the reliability and generalizability of findings by eliminating sampling bias (Claessens & Laeven, 2003; Hanlon & Heitzman, 2020). Moreover, the oil and gas sector exhibits unique fiscal characteristics, including industry-specific tax regulations under the Petroleum Industry Act (2021), making it imperative to include all listed oil and gas firms to capture the full variation in non-current asset composition and taxation outcomes. Secondary data were obtained from the annual reports and accounts of the selected companies, with rigorous data validation processes employed to ensure reliability and validity, including cross-verification with financial disclosures.

Model Specification

The model specification captures corporate taxation as the dependent variable, measured using the cash effective tax rate (CETR), and non-current assets as the independent variable, measured through non-current asset intensity (NCAI), tangible non-current asset intensity (PPEI), and intangible asset intensity (IAI). The study's model choice is methodologically justified. This model was selected because it effectively controls for unobserved heterogeneity across firms and captures both cross-sectional and time-series variations (Wang & Liang, 2023; Devereux, Lockwood, &

Redoano, 2023). The inclusion of longitudinal data covering 2012–2022 allows the model to reflect the dynamic nature of corporate tax behaviour and the evolving impact of regulatory reforms, such as the Petroleum Industry Act. The Hausman test was used to determine the appropriateness of the fixed or random effects specification, while robust regression estimation was applied to correct for heteroskedasticity detected in the data. This approach aligns with econometric best practices for small-sample panel data (Hanlon & Hoopes, 2022) and ensures unbiased, efficient, and consistent parameter estimates.

Functionally, the relationship between the variables is presented as:

$$CETR=f(NCAI, PPEI, IAI)$$

From the above functional relationship, the modified econometric model is specified as:

$$CETR=\beta_0+\beta_1 NCAI+\beta_2 PPEI+\beta_3 IAI+\beta_4 FS+\epsilon$$

Where:

CETR = Cash effective tax rate
NCAI = Non-current asset intensity
PPEI = Tangible non-current asset intensity
IAI = Intangible asset intensity
FS = Firm Size
β_0 = Constant term
β_1, β_2, β_3, β_4 = Coefficients attached to explanatory variables
ϵ = Stochastic error term.

Data Analysis Technique

To ensure the validity and reliability of the regression estimates, a series of diagnostic and econometric procedures were employed. The normality of residuals was assessed using the Jarque-Bera and Shapiro-Wilk tests to confirm that the model residuals were symmetrically distributed. Multicollinearity among the explanatory variables was examined through the Variance Inflation Factor (VIF), ensuring that no independent variable exhibited a high degree of interdependence that could bias coefficient estimates. The presence of heteroskedasticity and serial correlation in the error terms was evaluated using the Breusch-Pagan/Cook-Weisberg and Wooldridge tests, respectively, to verify the constancy and independence of the disturbances. Furthermore, Pesaran's Cross-Sectional Dependence (CD) test was conducted to detect possible contemporaneous correlations among the cross-sectional units.

The model selection process was guided by the Breusch-Pagan Lagrange Multiplier (LM) test and the Hausman specification test. The LM test determined whether a panel data model was more appropriate than a pooled Ordinary Least Squares (OLS) estimator, while the Hausman test informed the choice between fixed and random effects models. Where evidence of heteroskedasticity, autocorrelation, or cross-sectional dependence was found, robust standard errors were applied to correct for these violations, thereby enhancing the precision and consistency of the estimated coefficients.

The analytical procedure integrated both descriptive and inferential statistical techniques. Descriptive statistics were employed to summarise the characteristics of the dataset, including the mean, standard deviation, minimum, and maximum values of the study variables. These measures provided an initial understanding of data behaviour and distributional patterns across firms and periods. Econometrically, panel regression

analysis was utilised to investigate the effect of non-current assets indicators on corporate taxation among oil and gas firms in Nigeria.
All estimations were performed using STATA software, renowned for its robustness and efficiency in handling panel data structures. The combination of rigorous diagnostic testing and robust estimation procedures ensured that the empirical results were both statistically reliable and theoretically sound.

4.0 Data Analysis and Interpretations

Table 1:

Descriptive Statistics- Measures of Central Tendency and Normality test

Variable	Mean	Median	Max	Min	Std. Dev	N	JB (Normality)
CETR	29.0	11.0	656	-113.0	92.0	105	34.12(0.0000)***
NCAI	43.0	40.0	90	1.4	25.0	105	21.35 (0.0000)***
PPEI	28.0	27.0	76	0.0	19.0	105	4.30 (0.1164)
IAI	1.6	0.067	34	0.0	4.9	105	47.89 (0.0000)***
FS	12.0	12.0	15	7.2	1.6	105	11.40 (0.0034)*

Sources: Researchers' Computation, 2025.

Keys: CETR - Cash Effective Tax Rate; TL - Tax Liability; DTAI - Deferred Tax Assets Intensity; NCAI - Non-Current Asset Intensity; FS - Firm Size; SD - Standard Deviation; N - Number of Observations; JB - Adjusted Chi-Square Statistic for Normality; *** (0.1%) - Highly significant; ** (1%) – Significant; * (5%) - Moderately significant.

The descriptive statistics table offers a summary of key financial variables. The Cash Effective Tax Rate (CETR) has a mean of 29.0 and a median of 11.0, indicating right-skewness, with some firms experiencing significantly higher cash tax rates. A maximum value of 656 suggests disproportionately high tax payments, while a minimum of -113 implies negative tax outflows, possibly due to tax credits or refunds. The standard deviation of 92.0 highlights substantial variability. The Jarque-Bera normality test is statistically significant at the 0.1% level, confirming deviation from normality.

Non-Current Asset Intensity (NCAI) and Tangible Non-Current Asset Intensity (PPEI) exhibit moderate distributions. NCAI has a mean of 43.0, ranging from 1.4 to 90, with a standard deviation of 25.0, suggesting moderate dispersion. PPEI has a lower mean of 28.0 and a standard deviation of 19.0, with values ranging from 0 to 76. The normality test for NCAI is significant at the 0.1% level, indicating non-normality, whereas PPEI's normality test is not statistically significant, suggesting a closer alignment with normality.

Intangible Asset Intensity (IAI) and Firm Size (FS) show contrasting characteristics. IAI has a mean of 1.6 and a median of 0.067, reflecting extreme positive skewness, with a maximum of 34 and a minimum of 0. The high standard deviation of 4.9 suggests significant variability in intangible asset investments. The normality test is highly significant, confirming non-normality. In contrast, FS has a relatively stable distribution, with a mean and median of 12.0, a range between 7.2 and 15, and a standard deviation of 1.6. However, its normality test is significant at the 5% level, indicating a mild deviation from normality.

Correlation Test

Table 2:

Pearson Correlation Matrix (obs = 105)

	CETR	NCAI	PPEI	IAI	FS
CETR	1.0000				
NCAI	-0.0473	1.0000			
PPEI	0.0071	0.6738	1.0000		
IAI	-0.0368	0.2558	0.2087	1.0000	
FS	0.0337	0.2061	0.1975	-0.0294	1.0000

Sources: Researchers' Computation, 2025.

The correlation matrix presents the relationships between Cash Effective Tax Rate, Non-Current Asset Intensity, Tangible Non-Current Asset Intensity, Intangible Asset Intensity, and Firm Size. The Cash Effective Tax Rate shows weak correlations with other variables. Its near-zero correlation with Tangible Non-Current Asset Intensity (0.0071) indicates no meaningful relationship, while its weak negative correlation with Non-Current Asset Intensity (-0.0473) suggests that firms with higher non-current asset intensity may experience slightly lower cash effective tax rates. Similarly, the weak negative correlation with Intangible Asset Intensity (-0.0368) indicates that increased investments in intangible assets do not significantly impact the tax rate. The relationship between Firm Size and Cash Effective Tax Rate (0.0337) is also weak, implying that larger firms do not necessarily experience higher or lower tax burdens.

Non-Current Asset Intensity has a strong positive relationship with Tangible Non-Current Asset Intensity (0.6738), indicating that firms investing heavily in non-current assets often allocate more resources to tangible assets. Additionally, Non-Current Asset Intensity and Intangible Asset Intensity share a moderate positive correlation (0.2558), suggesting that firms with higher long-term asset bases tend to invest in intangible assets. Firm Size and Non-Current Asset Intensity (0.2061) also exhibit a positive relationship, reflecting the tendency of larger firms to hold more non-current assets. However, Firm Size and Intangible Asset Intensity (-0.0294) have a weak negative correlation, indicating that larger firms may not necessarily invest more in intangible assets. Overall, the correlations suggest that while firm size and asset composition affect financial decisions, their impact on corporate taxation and financial performance remains industry-specific and varies across firms.

Table 3:

Robust Regression results

	Robust Regression
NCAI	-0.09 (0.468)
PPEI	-0.31 (0.083)*
IAI	-0.32 (0.527)
FS	1.68 (0.281)
Constant	8.51 (0.643)
F-Value	2.78 (0.0307)*
Ramsey RESET	0.05 (0.9848)
Breusch-Pagan	11.13 (0.0009)***
Breusch and Pagan Lagrangian multiplier test	0.00 (1.0000)
Heteroskedasticity	11.13 (0.0009)***
R-Squared	0.0072
Observations	105

Sources: Researchers' Computation, 2025.

The robust regression was applied to address heteroskedasticity identified in the dataset. The Breusch-Pagan/ Cook-Weisberg test for heteroskedasticity returned a highly significant p-value (0.0009), confirming that the variance of errors was not constant across observations. To account for this, robust standard errors were used to ensure more reliable coefficient estimates. The results indicate that Tangible Non-Current Asset Intensity has a negative but statistically insignificant relationship with Cash Effective Tax Rate at the 5% level ($p = 0.083$), suggesting that while higher tangible asset intensity might lead to lower cash effective tax rates, the effect is not statistically robust. This may be due to depreciation-related tax deductions being offset by other factors such as regulatory tax policies and corporate tax planning strategies. Non-Current Asset Intensity, Intangible Asset Intensity, and Firm Size also showed statistically insignificant effects on Cash Effective Tax Rate, with p-values exceeding conventional significance thresholds.

The overall model fit, as indicated by the F-statistic (2.78, $p = 0.0307$), is significant at the 5% level, suggesting that the independent variables jointly explain some variation in the dependent variable. However, the R-squared value of 0.0072 indicates that only a small portion of the variation in the cash effective tax rate is accounted for by the explanatory variables. The Ramsey RESET test yielded an insignificant p-value (0.9848), indicating that the model does not suffer from omitted variable bias and is correctly specified. Furthermore, the Breusch and Pagan Lagrange Multiplier test returned an insignificant p-value (1.0000), suggesting that there is no strong evidence supporting the use of a panel model over a pooled ordinary least squares model. Despite the low explanatory power, the use of robust standard errors ensures that the coefficient estimates remain valid and resistant to the effects of heteroskedasticity. This enhances the reliability of the results and supports valid conclusions about the influence of non-current asset intensity, tangible asset intensity, intangible asset intensity, and firm size on the cash effective tax rate of listed oil and gas firms in Nigeria.

Discussion of Findings and Test of hypotheses

The regression results reveal that Non-Current Asset Intensity has a negative but statistically insignificant relationship with Cash Effective Tax Rate ($\beta = -0.09$, $p = 0.468$), indicating that increasing the proportion of non-current assets does not significantly impact a firm's cash tax burden. This finding suggests that firms with higher non-current asset intensity do not necessarily experience lower or higher tax rates. This may be because non-current assets, which include both tangible and intangible components, are subject to different tax treatments. Additionally, tax benefits from non-current assets, such as depreciation and amortization deductions, may be neutralized by firm-specific tax liabilities, regulatory obligations, or industry-specific tax structures, particularly in Nigeria's oil and gas sector. Consequently, the study's first hypothesis, which posits that Non-Current Asset Intensity has no significant effect on Cash Effective Tax Rate, is not rejected, as the p-value exceeds the 5% significance threshold.

The study's findings align with prior research by Hanlon and Heitzman (2010), Claessens and Laeven (2003), Richardson, Taylor, and Lanis (2021), Bird and Zolt (2008), and Gallemore and Jacob (2021), who argue that non-current assets alone do not directly influence tax rates due to variations in tax treatments across industries and regulatory environments. These studies emphasize that tax outcomes are often shaped by a combination of factors, including firm-specific tax strategies, depreciation rules, and available tax incentives. Conversely, the results contradict studies by Petersen and

Rajan (1997), De Simone (2020), Lanis and Taylor (2022), Devereux, Lockwood, and Redoano (2023), and Higgins, Omer, and Phillips (2023), who found that firms with higher non-current asset intensity often benefit from tax shields, capital expenditure incentives, and accelerated depreciation policies, leading to lower tax burdens. The divergence in findings may be due to Nigeria's regulatory environment, where strict tax policies under the Petroleum Industry Act (2021) impose standardized tax obligations that diminish the potential tax advantages of non-current asset holdings. In contrast, the studies that reported a significant relationship were conducted in developed economies where more flexible tax policies allow greater tax benefits for capital-intensive firms.

The regression results for Tangible Non-Current Asset Intensity indicate a negative but statistically insignificant relationship with Cash Effective Tax Rate ($\beta = -0.31$, $p = 0.083$), suggesting that while firms with higher tangible non-current assets may experience lower tax rates, this relationship is not strong enough to be statistically significant at the 5% level. This finding implies that although tangible asset investments may provide tax advantages, other factors, such as corporate tax planning strategies, regulatory tax policies, and firm-specific financial management practices, play a more dominant role in shaping tax burdens. As the p-value exceeds 0.05, the null hypothesis stating that Tangible Non-Current Asset Intensity has no significant effect on Cash Effective Tax Rate is not rejected. Therefore, tangible asset intensity does not significantly impact the tax liabilities of listed oil and gas firms in Nigeria, suggesting that while asset investments may contribute to tax optimization, the effects are not consistently strong or statistically robust.

This finding aligns with studies such as Bird and Zolt (2008), Claessens and Laeven (2003), Richardson, Taylor, and Lanis (2021), Gallemore and Jacob (2021), and Hanlon and Hoopes (2022), who argue that while tangible assets provide depreciation tax benefits, their overall effect on taxation may be diluted by corporate tax strategies and industry-specific tax structures. Bird and Zolt (2008) highlight that in developing economies, tax incentives for tangible assets are often inconsistently applied, reducing their overall impact on effective tax rates. Conversely, studies by Devereux, Lockwood, and Redoano (2023), Graham and Tucker (2006), Hanlon and Heitzman (2010), Lanis and Taylor (2022), and Higgins, Omer, and Phillips (2023) contradict this finding, asserting that firms with substantial tangible assets typically benefit from accelerated depreciation, investment tax credits, and capital allowances, leading to lower tax rates. The differences between these findings and the results of this study may be attributed to Nigeria's regulatory framework, where strict tax policies under the Petroleum Industry Act (2021) neutralize the expected benefits of tangible asset investments. Unlike developed economies where flexible tax regulations and capital allowances substantially reduce tax burdens, Nigeria's rigid tax system limits the extent to which tangible assets influence tax liabilities.

The regression results for Intangible Non-Current Asset Intensity show a negative but statistically insignificant relationship with Cash Effective Tax Rate ($\beta = -0.32$, $p = 0.527$), suggesting that firms with a higher proportion of intangible assets, such as patents, trademarks, and goodwill, do not experience meaningful tax reductions. Unlike tangible assets that benefit from depreciation allowances, intangible assets are subject to more complex tax treatments, including limited amortization deductions and stricter regulatory oversight. As the p-value exceeds 0.05, the null hypothesis stating that Intangible Non-Current Asset Intensity has no significant effect on Cash Effective Tax

Rate is not rejected. This suggests that intangible asset intensity does not significantly impact the tax liabilities of listed oil and gas firms in Nigeria. The lack of tax advantages for intangible assets may stem from Nigeria's tax system, which favors tangible asset investments through capital allowances and depreciation deductions, limiting the tax-saving potential of intangible assets.

This finding aligns with studies such as Bird and Zolt (2008), Claessens and Laeven (2003), Richardson, Taylor, and Lanis (2021), Gallemore and Jacob (2021), and Hanlon and Hoopes (2022), which argue that intangible assets are often subject to restrictive tax regulations that limit their effectiveness in reducing corporate tax burdens. Bird and Zolt (2008) highlight that in developing economies, tax incentives for intangible assets are minimal, while Richardson et al. (2021) emphasize that stricter amortization rules often diminish the tax advantages of intangible assets. However, these findings contrast with studies by De Simone (2020), Lanis and Taylor (2022), Devereux, Lockwood, and Redoano (2023), Higgins, Omer, and Phillips (2023), and Wang and Liang (2023), who provide evidence that firms with higher intangible assets often benefit from tax planning strategies, including intellectual property tax havens and research and development tax credits. The differences may be attributed to Nigeria's rigid tax framework, which lacks extensive tax incentives for intangible asset investments, unlike developed economies where firms can leverage intellectual property tax benefits. Furthermore, since Nigeria's oil and gas sector relies more on physical infrastructure, the tax effects of intangible assets are less pronounced in this context.

Practical Implications for Taxation and Asset Management

This study's empirical results revealed that non-current asset intensity, tangible non-current asset intensity, and intangible non-current asset intensity each have negative but statistically insignificant relationships with the cash effective tax rate of listed oil and gas firms in Nigeria. This suggests that while investment in long-term assets may offer some degree of tax relief through depreciation and amortization, such benefits are not sufficiently strong to produce significant reductions in firms' actual tax payments. These findings align with earlier studies such as Hanlon and Heitzman (2020), Claessens and Laeven (2003), and Bird and Zolt (2008), which emphasize that the effectiveness of asset-based tax incentives is heavily influenced by the fiscal and institutional environment in which firms operate.

From a policy perspective, these results carry important implications for Nigeria's taxation framework, particularly in the oil and gas sector. The insignificant tax effect of tangible and intangible asset intensity indicates that current tax policies and depreciation regimes under the Petroleum Industry Act (2021) may not provide sufficient incentives for long-term capital investments. Policymakers should therefore consider revising the structure of capital allowances and depreciation schedules to ensure that firms investing heavily in productive assets are appropriately rewarded through effective tax deductions. This would not only enhance investment in fixed infrastructure but also promote sustainable industrial development. Moreover, introducing targeted tax credits for research and development (R&D) and intellectual property (IP) could incentivize greater investment in intangible assets, which are critical for technological advancement and competitiveness.

The findings also have practical implications for corporate asset management and financial strategy. The absence of a significant relationship between asset intensity and

tax outcomes suggests that firms may not be optimizing their asset portfolios from a taxation standpoint. Oil and gas firms, in particular, should strengthen their tax planning and asset management strategies by aligning capital investment decisions with the tax code's available deductions and reliefs. This could include enhanced use of accelerated depreciation methods, investment tax credits, and timing of capital expenditures to achieve greater fiscal efficiency. Additionally, firms need to adopt integrated tax-asset planning frameworks, in which capital budgeting decisions explicitly consider the after-tax cost of investment.

From a broader economic standpoint, the results highlight the need for institutional consistency and transparency in tax enforcement. As Bird and Zolt (2008) and Gallemore and Jacob (2021) observed, developing countries often face challenges such as weak enforcement, administrative delays, and policy inconsistency, which undermine the effectiveness of asset-based tax incentives. For Nigeria, improving the predictability of the tax system and strengthening the implementation of fiscal incentives would enhance investor confidence and encourage firms to commit more resources to capital formation.

The findings underscore the importance of strategic fiscal reforms and efficient asset utilization. Strengthening the alignment between tax policy and asset management practices can create a more investment-friendly environment, stimulate industrial expansion, and enhance tax compliance without discouraging productive investment.

5.0 Conclusion and Recommendations

This study explored the impact of non-current asset intensity, tangible non-current asset intensity, and intangible non-current asset intensity on the cash effective tax rate of listed oil and gas firms in Nigeria. Using robust regression techniques to address heteroskedasticity, the findings reveal that non-current asset intensity does not have a significant effect on the cash effective tax rate, suggesting that merely holding more non-current assets does not automatically reduce a firm's tax burden. Additionally, tangible non-current asset intensity exhibited a negative but statistically insignificant relationship with the cash effective tax rate, implying that while firms with high tangible asset intensity may benefit from depreciation allowances, these benefits are not strong enough to achieve a significant reduction in tax liabilities. Likewise, intangible non-current asset intensity showed no significant relationship with the cash effective tax rate, indicating that intangible assets such as patents and trademarks do not provide substantial tax advantages due to limited amortization deductions and stringent tax regulations in Nigeria. The results further suggest that the regulatory framework governing Nigeria's oil and gas sector moderates the expected tax benefits of both tangible and intangible assets. In contrast to developed economies where tax incentives are more flexible and extensive, Nigeria's tax environment imposes rigid policies that limit the effectiveness of asset-based tax planning. The findings underscore the importance of considering industry-specific tax policies, as the tax advantages associated with asset investments may be neutralized by sector-specific regulatory obligations, particularly in highly regulated industries such as oil and gas.

Policymakers should revise depreciation policies and capital allowances to enhance the tax benefits associated with tangible assets, especially in capital-intensive industries like the oil and gas sector. Introducing more generous capital allowances and accelerated depreciation policies can create a more favorable tax environment,

encouraging long-term investments in physical infrastructure. This revision would allow firms to take advantage of depreciation-related tax benefits more effectively, thereby reducing their overall tax liabilities and promoting sustainable growth in the sector.

The government should introduce targeted tax incentives for intangible assets, such as research and development tax credits and intellectual property deductions, to promote investment in knowledge-based assets. These incentives would encourage firms to invest in intangible assets that drive innovation and long-term competitiveness. Given the increasing importance of intellectual property and technological advancements, providing tax benefits for intangible asset investments can stimulate growth in sectors where knowledge-based capital is critical for maintaining a competitive edge.

Firms should optimize their tax planning strategies by leveraging both asset management and other tax-saving mechanisms to minimize their effective tax rates. Beyond asset-based tax planning, companies should explore additional strategies such as tax loss carry forwards, investment tax credits, and international tax structuring to optimize their tax positions. Additionally, firms should closely monitor regulatory changes and adapt their tax planning strategies to remain compliant with evolving tax policies. By employing a combination of effective asset management and innovative tax planning techniques, firms can better manage their tax burdens while aligning with industry-specific regulatory requirements.

Limitations of the Study

The limitations of this study are as follows:

i. The study focuses exclusively on listed oil and gas firms in Nigeria, which limits the generalizability of the findings to other sectors with different asset structures and tax regimes.
ii. This study relies solely on secondary data from audited financial statements, which may not capture internal tax planning practices or unreported fiscal adjustments.
iii. Although robust regression was applied, potential endogeneity and dynamic effects were not fully addressed, which may affect causal inference.
iv. The study period (2012-2022) includes major policy changes such as the Petroleum Industry Act (2021), but does not separately assess their short-term and long-term impacts.
v. The research adopts a purely quantitative design, omitting qualitative insights that could explain managerial judgments and behavioural factors in tax decision-making.

Future Research Directions

In light of the identified limitations, the following areas are suggested for future research:

i. Future studies should broaden the scope beyond the oil and gas sector to include other industries, such as manufacturing and telecommunications, to enhance generalizability.

ii. Future research could conduct comparative studies across Sub-Saharan African countries to provide insights into how differing institutional and fiscal environments affect the asset-taxation relationship.

iii. Future studies may incorporate moderating factors such as corporate governance quality, financial leverage, and audit intensity to provide deeper insights into how firm-specific characteristics influence corporate tax outcomes.
iv. Future research could employ advanced econometric models, such as dynamic panel estimators, to capture lagged and causal effects between asset composition and taxation behaviour.
v. Future research should expand theoretical and empirical models to assess the effects of specific tax reforms, thereby enhancing policy development and promoting more effective asset management strategies in developing economies.

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