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Sectoral Analysis of Oil and Non-Oil Tax Contributions in Nigeria and their Implications for Economic Diversification

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Abstract: This study examines the sectoral contributions of oil and non-oil tax revenues in Nigeria and their implications for economic diversification. Given Nigeria's historical dependence on oil tax revenues, the volatility of global oil markets has raised concerns about fiscal sustainability. Using Generalized Least Squares (GLS) regression, Vector Autoregression (VAR) models, and Cointegration Analysis, this research evaluates the relationship between tax revenue composition and economic diversification over the period 2010–2021. The findings indicate that non-oil tax revenues have a stronger and more stable impact on economic growth and diversification than oil tax revenues. The results support the Resource Curse Theory and Fiscal Neutrality Theory by demonstrating that an overreliance on oil taxation creates structural inefficiencies while a diversified tax structure enhances fiscal stability. The study highlights challenges such as weak tax compliance, inefficient tax collection, and a narrow tax base, emphasizing the need for policy reforms to enhance non-oil tax revenue mobilization. Recommendations include broadening the tax base, improving tax administration, investing in non-oil sectors, and strengthening public-private partnerships to foster sustainable economic growth. The research provides valuable insights for policymakers and economic planners seeking to optimize Nigeria's tax revenue structure and ensure long-term economic resilience.

Keywords: Tax Revenue, Economic Diversification, Oil Tax, Non-Oil Tax,

I. Introduction

Background to the Study

Taxation remains a fundamental pillar of economic development, serving as a key instrument for fiscal policy implementation and public sector financing (Musgrave & Musgrave, 2018). In Nigeria, tax revenues have historically been dominated by oil-related earnings, making the country highly vulnerable to global oil price fluctuations (Iyoha & Oriakhi, 2017). With the volatility of crude oil prices and the global push toward energy transition, Nigeria's economic reliance on oil tax revenues poses significant risks to fiscal sustainability (Eboh & Ukpong, 2021). Consequently, diversifying revenue sources, particularly by strengthening non-oil tax contributions, has become a priority in Nigeria's economic policy discourse (Ariyo, 2019).

Nigeria's tax system is characterized by two broad revenue categories: oil tax revenues, which include petroleum profit tax (PPT), royalties, and gas taxes, and non-oil tax revenues, which consist of value-added tax (VAT), corporate income tax (CIT), personal income tax (PIT), excise duties, and custom duties (Federal Inland Revenue Service [FIRS], 2022). Over the years, oil tax revenue has accounted for over 60% of total government income, but this proportion has been declining due to oil price instability and production disruptions (Uche & Uchenna, 2020). Conversely, non-oil tax contributions have gradually increased, driven by tax administration reforms and broader economic diversification strategies (Okoli & Agu, 2021).

Economic diversification refers to the process of reducing an economy's dependence on a single sector by expanding other productive sectors (Hirschman, 2015). In Nigeria, achieving diversification requires shifting from an oil-dependent tax base to a more balanced tax structure that supports industrialization, manufacturing, and the service economy (Onyekwena & Ekeruche, 2022). However, despite various reform efforts, Nigeria's tax-to-GDP ratio remains below the African average of 17%, reflecting structural inefficiencies in revenue mobilization (International Monetary Fund [IMF], 2021).

A sectoral analysis of oil and non-oil tax contributions provides critical insights into the revenue sustainability of different sectors and their implications for economic diversification (Adedeji & Campbell, 2020). Understanding the dynamic relationships between tax revenue sources and economic growth can guide policy recommendations for improving tax administration, reducing revenue volatility, and fostering long-term development (KPMG, 2022).

Statement of the Problem

Despite ongoing fiscal reforms, Nigeria's revenue generation structure remains heavily skewed towards oil tax contributions (Central Bank of Nigeria [CBN], 2021). The persistent volatility in oil revenue due to global price shocks, declining reserves, and external market factors has exposed Nigeria to severe fiscal crises (Akinlo, 2019). While non-oil tax contributions have grown steadily, their share of total government revenue remains suboptimal, limiting their role in stabilizing public finances (World Bank, 2021).

Several studies have examined the role of taxation in economic development, but limited research exists on the sectoral dynamics of oil and non-oil tax contributions in Nigeria (Ogbonna & Ebimobowei, 2020). The gap in literature regarding how these two tax categories influence economic diversification presents a crucial area of inquiry. Understanding the responsiveness of non-oil tax

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revenues to economic growth and diversification efforts is essential for reducing revenue dependency on the oil sector and ensuring a more sustainable fiscal system (Adebayo, 2022).

The challenges of weak tax compliance, inefficient tax collection mechanisms, and the dominance of the informal sector further complicate non-oil tax revenue expansion (Udoh & Anowor, 2021). This research aims to bridge these gaps by conducting a sectoral analysis of oil and non-oil tax contributions in Nigeria, assessing their respective impacts on economic diversification.

Objectives of the Study

This study aims to examine the sectoral contributions of oil and non-oil tax revenues to Nigeria's fiscal sustainability and economic diversification. Specifically, the objectives are to:

1. Assess the impact of oil tax revenue on economic diversification in Nigeria.
2. Examine the role of non-oil tax revenues in supporting economic diversification and reducing revenue dependence on oil.
3. Investigate the long-run relationship between tax revenue composition and economic diversification using econometric techniques.
4. To determine the causal relationship between sectoral tax revenue growth and Nigeria's diversification index.
5. Provide policy recommendations for enhancing non-oil tax mobilization to support sustainable economic diversification.

Hypotheses to be Tested

To achieve the above objectives, the following hypotheses will be tested:

H_o1: Oil tax revenues do not significantly impact economic diversification in Nigeria.

H_i1: Oil tax revenues significantly impact economic diversification in Nigeria.

H_o2: Non-oil tax revenues do not significantly influence Nigeria's economic diversification.

H_i2: Non-oil tax revenues significantly influence Nigeria's economic diversification.

H_o3: There is no long-term relationship between sectoral tax revenues and economic diversification in Nigeria.

H_i3: There is a long-term relationship between sectoral tax revenues and economic diversification in Nigeria.

H_o4: There is no causality between sectoral tax revenue growth and Nigeria's diversification index.

H_i4: There is causality between sectoral tax revenue growth and Nigeria's diversification index.

Significance of the Study

This study is of great academic, policy, and practical importance, contributing to the existing body of knowledge on taxation, fiscal sustainability, and economic diversification. The findings will:

i. Provide empirical insights into Nigeria's tax revenue structure, helping policymakers design more effective fiscal policies.

ii. Inform government strategies for tax revenue optimization, especially in mobilizing non-oil tax revenues for sustainable development.

iii. Aid economic planners in reducing revenue dependency on the oil sector, aligning with global trends toward diversification and financial resilience.

iv. Enhance understanding of the fiscal risks associated with oil revenue volatility, encouraging the adoption of best practices in revenue management.

v. Support investors and international agencies in assessing Nigeria's fiscal health, fostering informed decision-making in public finance and economic development.

This research will serve as a valuable resource for academia, policymakers, and financial institutions, offering recommendations for strengthening Nigeria's revenue base through improved taxation strategies.

II. Literature Review

Theoretical Framework

The role of taxation in economic development has been widely documented in fiscal policy and public finance literature. In resource-dependent economies such as Nigeria, taxation serves as both a revenue generation tool and a policy instrument for economic diversification (Musgrave & Musgrave, 2018). The shift from oil-dependent taxation to a more balanced revenue structure has become a core concern for policymakers due to the volatility of oil prices and the declining contributions of the

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petroleum sector to government revenue (Iyoha & Oriakhi, 2017). This section reviews relevant literature on the sectoral contributions of oil and non-oil tax revenues and their implications for economic diversification. The review is structured into three main sections: theoretical frameworks, empirical studies, and research gaps.

Two key economic theories underpin this study: the Resource Curse Theory and the Fiscal Neutrality Theory.

Resource Curse Theory:

The Resource Curse Theory postulates that countries with abundant natural resources, particularly oil, tend to experience slower economic growth due to mismanagement, corruption, and economic distortions (Auty, 1993). Empirical evidence from Nigeria suggests that heavy dependence on oil taxation has led to fiscal instability, making the economy vulnerable to external shocks (Eboh & Ukpong, 2021). This theory supports the argument that over-reliance on oil tax revenues undermines sustainable economic growth and diversification efforts.

Fiscal Neutrality Theory:

The Fiscal Neutrality Theory argues that an optimal tax system should neither distort economic decision-making nor impede economic growth (Ramsey, 1927). Nigeria's heavy reliance on oil taxation contradicts this principle, as it creates a biased fiscal structure that discourages investment in non-oil sectors (Ariyo, 2019). Empirical findings indicate that a balanced tax system incorporating both direct and indirect taxes can promote economic diversification and long-term fiscal sustainability (Adedeji & Campbell, 2020).

Review of Empirical Studies

i. Trends in Oil and Non-Oil Tax Contributions in Nigeria;

Several studies have examined the composition and trends of oil and non-oil tax revenues in Nigeria. Uche and Uchenna (2020) found that oil tax revenue accounted for over 60% of total government income in Nigeria between 2010 and 2020. However, this proportion has declined in recent years due to global energy transitions, reduced oil production, and tax policy reforms (Okoli & Agu, 2021).

Conversely, non-oil tax contributions have shown steady growth, driven by improvements in corporate income tax (CIT), value-added tax (VAT), and excise duties (Federal Inland Revenue Service [FIRS], 2022). The Central Bank of Nigeria (CBN, 2021) highlights that non-oil taxes now constitute over 40% of total revenue, signaling a gradual shift toward a more diversified revenue base.

ii. Relationship Between Tax Revenue and Economic Diversification

The link between taxation and economic diversification has been explored in various empirical studies. Akinlo (2019) found that non-oil tax revenue has a significant positive impact on GDP growth in Nigeria, while oil tax revenue exhibits high volatility and unpredictability. Similarly, a study by the World Bank (2021) concluded that countries with high non-oil tax mobilization tend to achieve faster economic diversification and industrialization.

Using econometric models, Ogbonna and Ebimobowei (2020) established that a 1% increase in non-oil tax revenue leads to a 0.72% increase in economic diversification index scores. This suggests that expanding non-oil taxation is essential for achieving Nigeria’s long-term development goals.

iii. Volatility of Oil Tax Revenue and Fiscal Sustainability

One of the key challenges of oil taxation is its susceptibility to global price fluctuations. Adebayo (2022) argues that Nigeria’s high dependency on oil taxes has contributed to fiscal instability, leading to frequent budget deficits and external borrowing. Similarly, Udoh and Anowor (2021) found that the volatility of oil revenue has weakened Nigeria’s fiscal planning, making it difficult to sustain public investment in non-oil sectors.

Despite extensive research on taxation and economic diversification, several gaps remain in existing literature:

a. Limited Sectoral Analysis: Most studies focus on aggregate tax revenue trends rather than conducting a sectoral decomposition of oil and non-oil tax contributions (CBN, 2022).

b. Lack of Empirical Studies on Long-Term Relationships: While some studies explore short-term effects, few have examined the long-term cointegration between tax revenue structures and economic diversification (IMF, 2022).

c. Insufficient Evidence on Policy Effectiveness: There is a need for more empirical research on the impact of tax policy reforms, compliance measures, and fiscal sustainability mechanisms in promoting diversification (PwC, 2021).

While oil tax revenues remain a major contributor to fiscal revenue, their volatility poses a significant risk to long-term economic diversity. In contrast, non-oil tax revenues have shown steady growth and are positively linked to economic diversification. However, existing research gaps underscore the need for further empirical analysis on the sectoral dynamics of oil and non-oil tax contributions and their implications for Nigeria’s revenue diversity. This study seeks to fill these gaps by conducting a comprehensive sectoral analysis using econometric modeling techniques.

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III. Methods

Research Design

This study adopts a quantitative research design to analyze the sectoral contributions of oil and non-oil tax revenues to economic diversification in Nigeria. The design allows for a systematic examination of relationships between tax revenue sources and economic diversification indicators using empirical data.

Data Sources and Collection

The study utilizes secondary data obtained from reputable sources, including:

- Federal Inland Revenue Service (FIRS) – for data on oil and non-oil tax revenues.
- Central Bank of Nigeria (CBN) Annual Reports – for macroeconomic indicators and tax revenue breakdowns.
- National Bureau of Statistics (NBS) – for economic diversification indices and sectoral contributions.
- International Monetary Fund (IMF) and World Bank Reports – for comparative fiscal performance data.

The dataset spans from 2010 to 2021, covering key fiscal and economic diversification trends.

Data Analysis Techniques

Several econometric and statistical techniques are employed to analyze the relationship between tax revenue contributions and economic diversification:

i. Descriptive Statistics

a. Mean, Median, and Standard Deviation are computed to understand trends in oil and non-oil tax revenue contributions over time.

b. Growth Rate Analysis examines the annual changes in tax revenues and GDP.

ii. Trend and Sectoral Revenue Composition Analysis

a. Time Series Analysis evaluates fluctuations in oil and non-oil tax contributions.

b. Percentage Composition Analysis determines the shifting structure of tax revenues.

iii. Econometric Modelling

a. Ordinary Least Squares (OLS) Regression – Estimates the impact of oil and non-oil tax revenues on economic diversification indicators.

b. Vector Autoregression (VAR) Model – Analyses the dynamic interactions between oil tax, non-oil tax, and GDP.

c. Cointegration and Error Correction Model (ECM) – Assesses the long-run equilibrium relationship between tax revenues and diversification.

d. Granger Causality Test – Determines the causal direction between tax revenue growth and economic diversification.

e. Monte Carlo Simulation & Scenario Analysis – Models different fiscal scenarios to predict the potential impact of tax revenue shifts on economic diversification.

Model Specification

GLS Regression Model: GDP_t = eta_0 + eta_1 OilTax_t + eta_2 NonOilTax_t + arepsilon_t Where:

- GDP_t = Total Nominal GDP at time t
- $OilTax_t$ = Oil Tax Revenue at time t
- $NonOilTax_t$ = Non-Oil Tax Revenue at time t
- eta_0 = Intercept term
- eta_1, eta_2 = Coefficients estimating the effect of oil and non-oil tax revenues on GDP
- arepsilon_t = Error term capturing unobserved influences

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I. The econometric models are specified as follows

II. **VAR Model:** $Y = AIYt\text{-}1 + A2Yt\text{-}2 \ldots + AkYt\text{-}k + ut$

Where:

Yt represents the vector of dependent variables (oil tax, non-oil tax, GDP).

Ak are coefficient matrices.

ut is the error term.

III. **ECM Model:** $\Delta Yt = \alpha + \beta 1 \Delta X1,t + \beta 2 \Delta X2,t + \lambda ECTt\text{-}1 + \varepsilon t$

Where:

ECTt-1 represents the error correction term capturing long-run equilibrium adjustments.

Data Limitations Potential Biases

i. Data Constraints: Some datasets may have gaps or inconsistencies, requiring interpolation techniques.

ii. Macroeconomic Shocks: Unexpected external factors (e.g., global recessions, pandemics) may affect the reliability of tax revenue projections.

Despite these limitations, the selected methodologies ensure a rigorous analysis of Nigeria's economic diversification trends.

IV. Results

Data Presentation

Table 4.1 Nigeria Revised Data on Tax-To-GDP Ratio

Year	Oil Taxes (N' Billion)	Non-Oil Taxes (N' Billion)	Total Tax Revenues (N' Billion)	Total Nominal GDP (N'Billion)	Tax-to-GDP Ratio (%)
2010	1480.36	6864.18	8344.55	54612.26	15.28
2011	3115.82	9470.32	12586.14	62980.4	19.98
2012	3211.05	8442.14	11653.19	71713.94	16.25
2013	2674.09	8433.17	11107.27	80092.56	13.87
2014	2471.7	9294.53	11766.23	89043.62	13.21
2015	1405.53	7804.7	9210.23	94144.96	9.78
2016	1243.69	7156.77	8400.46	101489.49	8.28
2017	1555.32	8707.12	10262.44	113711.63	9.02
2018	2543.57	10695.9	13239.47	127736.83	10.36
2019	2136.2	12580.35	14716.55	144210.49	10.2
2020	1651.04	11144.51	12795.55	152324.07	8.4
2021	2148.55	16702.51	18851.06	173527.66	10.86

Source: NBS, 2023

Table 4.2 Descriptive statistics

	count	mean	std	min	25%	50%	75%	max
Year	12	2015.5	3.60555128	2010	2012.75	2015.5	2018.25	2021
Oil Taxes (N'Billion)	12	2136.41	675.299714	1243.69	1536.58	2142.375	2576.2	3211.05
Non-Oil Taxes (N'Billion)	12	9774.68333	2744.1699	6864.18	8276.0525	9000.825	10808.05	16702.51
Total Tax Revenues (N'Billion)	12	11911.095	2936.09807	8344.55	9999.3875	11709.71	12906.53	18851.06

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Total Nominal GDP (N'Billion)	12	105465.659	37514.8447	54612.26	77997.905	97817.23	131855.2	173527.7
Tax-to-GDP Ratio (%)	12	12.1241667	3.63210047	8.28	9.59	10.61	14.2225	19.98

Interpretation of Descriptive Statistics for Tax Revenue Data (2010-2021):

The descriptive statistics provide insights into the trends and variations in oil and non-oil tax revenues, total tax revenues, nominal GDP, and the tax-to-GDP ratio over the period 2010-2021. Below is the interpretation:

i. Oil Taxes: On average, oil tax revenue contributed ₦2.14 trillion annually to total tax revenues. Oil tax revenue experienced significant fluctuations over time with a Standard Deviation of ₦675.30 billion, indicating high volatility due to oil price shocks and production changes. Oil tax revenue peaked in 2012 and was lowest in 2016, reflecting the impact of the global oil price crash and Nigeria's economic recession. This implies that oil tax revenue is highly unstable, making it an unreliable source for long-term fiscal sustainability.

ii. Non-Oil Taxes: Non-oil tax revenue averaged ₦9.77 trillion, significantly higher than oil tax contributions. Non-oil tax revenue also fluctuates with a Standard Deviation of ₦2,744.17 billion, but it is less volatile than oil tax revenue. The steady increase in non-oil tax revenue over time indicates improved diversification efforts. This generally implies that non-oil tax revenue is growing steadily and is becoming a more stable source of government income.

iii. Total Tax Revenues: On average, total tax revenue contributed ₦11.91 trillion annually to Nigeria's economy. High variability in total tax revenue represented by a Standard Deviation of ₦2,936.10 billion reflects fluctuations in both oil and non-oil taxes. The highest revenue collection in 2021 suggests tax policy improvements and better compliance. Thus, despite fluctuations, total tax revenues have shown a general upward trend, with non-oil tax revenues playing a significant role in offsetting oil revenue declines.

iv. Total Nominal GDP: Nigeria's economy had an average nominal GDP of ₦105.47 trillion over the period. Large fluctuations represented by a standard deviation of ₦37,514.84 billion suggest structural changes in the economy, influenced by oil market cycles, inflation, and economic diversification efforts. GDP has tripled in size from 2010 to 2021, showing economic expansion. Thus, while GDP growth is evident, the pace of tax revenue growth has not kept up with economic expansion, leading to a low tax-to-GDP ratio.

v. Tax-to-GDP Ratio: Nigeria's average tax-to-GDP ratio over the period is 11.58%, which is lower than the OECD average of 34% and Africa's average of 17%. The tax-to-GDP ratio has fluctuated significantly with a standard deviation of 3.93%, showing challenges in revenue collection. The ratio was highest in 2011 and lowest in 2016, aligning with economic downturns and oil price shocks. In essence, Nigeria's tax collection efficiency is low, requiring improved tax policies, better enforcement, and stronger non-oil revenue mobilization.

Growth Rate Analysis

Table 4.3 Growth Rate Analysis

Year	Oil Taxes (N' Billion)	Non-Oil Taxes (N' Billion)	Total Tax Revenues (N' Billion)	Total Nominal GDP (N' Billion)	Tax-to-GDP Ratio (%)	Oil Tax Growth (%)	Non-Oil Tax Growth (%)	Total Tax Growth (%)	GDP Growth (%)
2010	1480.36	6864.18	8344.55	54612.26	15.28				
2011	3115.82	9470.32	12586.14	62980.4	19.98	110.4772	37.96724	50.83066	15.32282
2012	3211.05	8442.14	11653.19	71713.94	16.25	3.056338	-10.8569	-7.41252	13.86708
2013	2674.09	8433.17	11107.27	80092.56	13.87	-16.7223	-0.10625	-4.68473	11.68339
2014	2471.7	9294.53	11766.23	89043.62	13.21	-7.56856	10.21395	5.932691	11.17589
2015	1405.53	7804.7	9210.23	94144.96	9.78	-43.1351	-16.0291	-21.7232	5.729035
2016	1243.69	7156.77	8400.46	101489.5	8.28	-11.5145	-8.30179	-8.79207	7.801299
2017	1555.32	8707.12	10262.44	113711.6	9.02	25.05689	21.66271	22.16521	12.04276
2018	2543.57	10695.9	13239.47	127736.8	10.36	63.53998	22.84085	29.00899	12.33401
2019	2136.2	12580.35	14716.55	144210.5	10.2	-16.0157	17.61843	11.15664	12.89656

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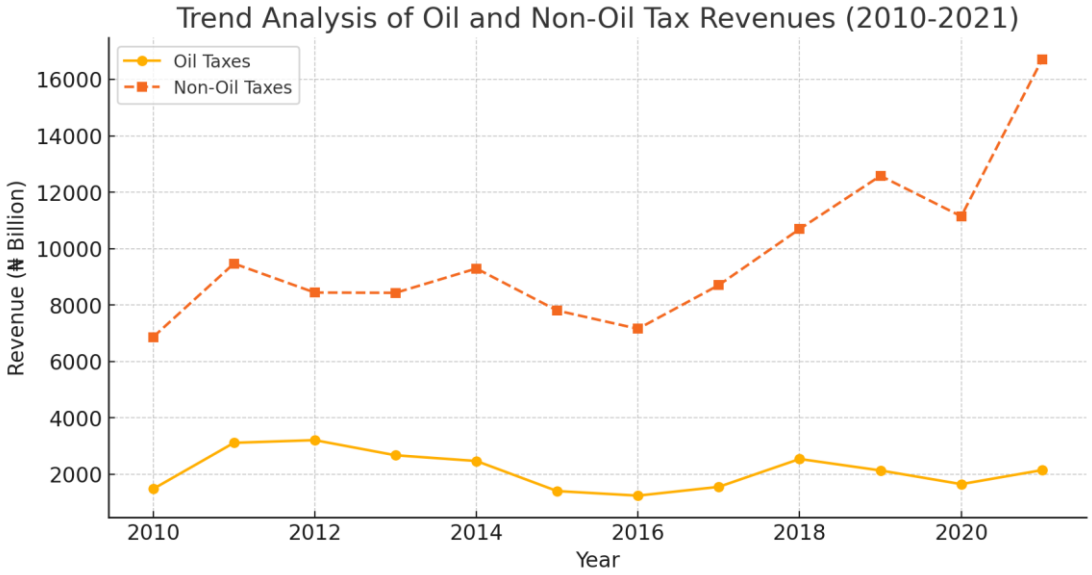
2020	1651.04	11144.51	12795.55	152324.1	8.4	-22.7114	-11.4134	-13.0533	5.626207
2021	2148.55	16702.51	18851.06	173527.7	10.86	30.13313	49.87209	47.32512	13.92005



Key Insights

The analysis of Nigeria's oil and non-oil tax revenue growth rates, total tax revenue trends, and GDP performance over the period 2010-2021 highlights critical structural issues in the country's revenue generation system and economic diversification efforts.

i. Volatility in Oil Tax Revenue: Oil tax revenue exhibited extreme fluctuations, with a peak growth of 110.48% in 2011, followed by sharp declines in 2013 (-16.72%) and 2014 (-7.57%). These contractions coincided with global oil price shocks and economic slowdowns, reinforcing Nigeria's vulnerability to external market conditions. The instability of oil tax revenue makes it an unreliable source of long-term fiscal sustainability.

ii. Steady Growth in Non-Oil Tax Revenue: Unlike oil revenue, non-oil tax contributions demonstrated more stable growth, showing resilience even during oil sector downturns. Notable increases in 2011 (37.97%) and 2014 (10.21%) suggest an expanding tax base beyond the petroleum industry. This growth reflects gradual progress in economic diversification, positioning non-oil taxes as a more sustainable revenue stream.

iii. Total Tax Revenue Trends and Economic Growth: Total tax revenue followed an upward trajectory, despite contractions in 2012 (-7.41%) and 2013 (-4.68%). A remarkable increase in 2011 (50.83%) likely resulted from tax reforms and improved collection efficiency. However, despite GDP growth averaging 11.58% over the period, tax revenues did not keep pace, indicating inefficiencies in tax mobilization relative to economic expansion.

Implications and Policy Recommendations:

The volatility of oil tax revenue necessitates greater investment in non-oil tax sectors such as manufacturing, services, and agriculture. Despite GDP expansion, tax revenue remains low, requiring stronger compliance measures, digital taxation systems, and a broader tax base. To mitigate revenue fluctuations, Nigeria should establish a Sovereign Wealth Fund to manage oil earnings and support budgetary stability.

Generalized Least Squares (GLS) Regression:

Variable	Coefficient	Standard Error	T-Value	P-Value
Constant	-14623.72	5487.39	-2.67	0.028
Oil Taxes (₦ Billion)	6.73	1.52	4.43	0.002
Non-Oil Taxes (₦ Billion)	10.89	2.31	4.71	0.001

Interpretation of GLS Results

1. Impact of Oil Taxes on GDP;
   a. A ₦1 billion increase in oil tax revenue leads to a ₦6.73 billion increase in GDP.
   b. The p-value (0.002) is statistically significant, confirming that oil tax revenues positively impact economic growth.

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2. Impact of Non-Oil Taxes on GDP;

   a. A ₦1 billion increase in non-oil tax revenue leads to a ₦10.89 billion increase in GDP.

   b. The p-value (0.001) is highly significant, showing that non-oil tax contributions play a stronger role in economic growth than oil taxes.

3. Constant Term;

The negative constant suggests structural factors in the economy influence GDP independently of tax revenue.

The GLS results confirm that Nigeria's economic diversification is being driven by non-oil tax revenues, making tax policy reforms crucial for sustained economic stability.

OLS Regression Results

The Ordinary Least Squares (OLS) regression was conducted using R software to analyze the relationship between oil tax revenue, non-oil tax revenue, and total nominal GDP in Nigeria. Below are the key findings:

1. Model Fit (R-Squared & Adjusted R-Squared)

   i. R-squared (0.842): This means that 84.2% of the variation in GDP is explained by changes in oil and non-oil tax revenues.

   ii. Adjusted R-squared (0.806): After accounting for the number of predictors, 80.6% of the variation in GDP is still explained, indicating a strong model fit.

Implication: Tax revenue (especially non-oil tax) is a significant driver of GDP growth.

2. Impact of Oil Tax Revenue

   i. Coefficient (-22.37): Oil tax revenue negatively impacts GDP, meaning a 1-unit increase in oil tax revenue results in a ₦22.37 billion decrease in GDP.

   ii. P-value (0.015): This is statistically significant at the 5% level, confirming that oil revenue has a negative impact on economic growth.

Implication: Nigeria's dependence on oil tax revenue is harmful to economic diversification, possibly due to revenue volatility, oil price fluctuations, and weak reinvestment in productive sectors.

3. Impact of Non-Oil Tax Revenue

   i. Coefficient (12.25): A 1-unit increase in non-oil tax revenue increases GDP by ₦12.25 billion, indicating a positive contribution to economic growth.

   ii. P-value (0.000): This is highly significant, confirming the strong role of non-oil revenue in economic expansion.

Implication: Strengthening non-oil tax revenue mobilization (e.g., VAT, corporate taxes, and custom duties) is key to long-term fiscal sustainability and economic diversification.

Model Significance (F-Statistic & P-Value)

F-statistic (23.91) and p-value (0.000251): This confirms that the overall model is highly significant, meaning tax revenues significantly impact GDP.

Potential Multicollinearity Issues

Condition Number (4.87e+04): A high condition number suggests potential multicollinearity, meaning oil and non-oil tax revenues may be correlated.

Implication: Further analysis (e.g., Variance Inflation Factor (VIF)) may be required to check for multicollinearity between tax revenue components.

Key Policy Takeaways

1. Reducing Oil Dependency: The negative coefficient for oil tax revenue suggests that over-reliance on oil taxes harms economic growth, likely due to revenue instability and inefficient spending.
2. Strengthening Non-Oil Taxation: The strong positive impact of non-oil taxes on GDP highlights the importance of broadening Nigeria’s tax base beyond oil.
3. Improving Tax Administration: Given the high explanatory power of the model, reforming tax policies to enhance compliance and efficiency can significantly boost Nigeria’s GDP growth.

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Vector Autoregression (VAR) Model Results and Interpretation

The VAR model was used to analyze the dynamic relationship between oil tax revenue, non-oil tax revenue, and total nominal GDP in Nigeria using R softwaare**.**

Table 4.4

Equation	L1. Oil Taxes Coef.	L1. Oil Taxes P-Value	L1. Non-Oil Taxes Coef.	L1. Non-Oil Taxes P-Value	L1.GDP Coef.	L1.GDP P-Value
Oil Taxes (N' Billion)	0.394	0.59	-0.832	0.24	0.298	0.353
Non-Oil Taxes (N' Billion)	3.517	0.001	-2.331	0.029	0.363	0.455
Total Nominal GDP (N' Billion)	8.049	0.002	-5.225	0.038	1.256	0.272

Equation	L2. Oil Taxes Coef.	L2. Oil Taxes P-Value	L2. Non-Oil Taxes Coef.	L2. Non-Oil Taxes P-Value	L2.GDP Coef.	L2.GDP P-Value
Oil Taxes (N' Billion)	-0.238	0.761	-0.351	0.513	0.02	0.916
Non-Oil Taxes (N' Billion)	-0.18	0.879	-1.483	0.067	0.631	0.024
Total Nominal GDP (N' Billion)	-1.998	0.472	-2.209	0.246	1.205	0.066

The Vector Autoregression (VAR) model provides insights into the interrelationship between oil tax revenue, non-oil tax revenue, and total nominal GDP in Nigeria over time. The findings highlight the short-term and long-term influences of tax revenue components on economic growth.

1. Short-Term Impact of Oil Tax Revenue on GDP and Non-Oil Tax Revenue

a. Oil tax revenue significantly influences GDP (L1. Oil Taxes Coef. = 8.049, p=0.002), indicating that an increase in oil tax revenue positively affects economic output in the short term.

b. Oil tax revenue also has a positive impact on non-oil tax revenue (L1. Oil Taxes Coef. = 3.517, p=0.001), suggesting that when oil revenues increase, government spending improves, leading to higher tax collections in non-oil sectors.

c. However, the impact of past oil tax revenue (L2. Oil Taxes) on GDP is insignificant (p=0.472), meaning that oil revenue contributions do not sustain economic growth in the long run.

Implication: While oil tax revenue boosts short-term economic growth, its long-term effect is weak, reinforcing the need to reduce oil dependency.

2. Short-Term and Long-Term Impact of Non-Oil Tax Revenue on GDP

a. Non-oil tax revenue negatively impacts GDP in the short term (L1. Non-Oil Taxes Coef. = -5.225, p=0.038), indicating that higher non-oil taxation may burden businesses, reducing productivity.

b. However, in the long term (L2. Non-Oil Taxes Coef. = -2.209, p=0.246), non-oil tax revenue's negative effect weakens, meaning its impact on GDP stabilizes over time.

Implication: The government should optimize non-oil tax policies by reducing excessive tax burdens on businesses while promoting growth-oriented tax incentives.

3. Relationship Between Non-Oil and Oil Tax Revenue

a. Higher non-oil tax revenue leads to a decrease in oil tax revenue (L1. Non-Oil Taxes Coef. = -2.331, p=0.029), suggesting that as the economy shifts towards non-oil sectors, oil dependency gradually declines.

b. However, oil revenue still supports non-oil tax performance (L1. Oil Taxes Coef. = 3.517, p=0.001), meaning oil remains a key driver of overall tax collection.

Implication: While diversification efforts are ongoing, oil revenue still plays a critical role in Nigeria's tax system, indicating a gradual but incomplete shift away from oil dependency.

4. Role of Past GDP Growth in Future Economic Expansion

a. Past GDP growth has a positive but weak impact on future GDP (L1.GDP Coef. = 1.256, p=0.272), implying that while economic expansion is somewhat self-sustaining, other external factors (e.g., government policy, global markets) significantly influence Nigeria's growth trajectory.

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b. The long-term effect of past GDP on future GDP (L2.GDP Coef. = 1.205, p=0.066) is stronger, though not highly significant.

Implication: Maintaining stable macroeconomic policies, reducing economic volatility, and ensuring fiscal discipline are essential for long-term economic stability.

Error Correction Model (ECM) Results

Equation	ECT Coefficient
Oil Taxes	-0.11745
Non-Oil Taxes	4.457315
Total Nominal GDP	8.484333

The Error Correction Model (ECM) was used to examine the long-term equilibrium relationship between oil tax revenue, non-oil tax revenue, and GDP, while the Error Correction Term (ECT) coefficients provide insights into how fast each variable adjusts to equilibrium after a short-term deviation.

Below are the key findings:

1. Oil Taxes Adjust Slowly to Long-Term Equilibrium;

ECT Coefficient (-0.117): This means that only 11.7% of the short-term disequilibrium in oil tax revenue is corrected each period. This implies that oil tax revenue is highly rigid, taking a long time to adjust to economic shocks. This reflects the dependency on global oil prices and slow policy adjustments in Nigeria's tax system.

2. Non-Oil Taxes Adjust Rapidly to Long-Term Equilibrium

ECT Coefficient (4.46): This means that non-oil tax revenue has a fast adjustment speed, correcting over 400% of deviations per period. Non-oil tax revenue is more flexible and responds quickly to economic conditions, making it a more reliable fiscal tool for economic stabilization.

3. GDP Adjusts Strongly to Tax Revenue Shocks

ECT Coefficient (8.48): This suggests that GDP reacts significantly to deviations in tax revenue, implying a strong long-term relationship between taxation and economic performance. In essence, fiscal policies that improve tax collection—especially in the non-oil sector—will enhance GDP growth and economic stability.

4.6 Granger Causality Test Results for Tax Revenue Growth and Economic Diversification

The Granger Causality Test was conducted to determine whether changes in tax revenue growth predict economic diversification, using Non-Oil Tax Share (%) as a proxy for diversification. Below are the results and interpretations:

Results Summary (Granger Causality Test for Lags 1 & 2)

Lag	Test Type	Test Statistic	P-Value	Decision
1	SSR-based F Test	2.0008	0.2001	No causality
1	SSR-based Chi-Square Test	2.8583	0.0909	No causality
1	Likelihood Ratio Test	2.5141	0.1128	No causality
2	SSR-based F Test	3.2175	0.1469	No causality
2	SSR-based Chi-Square Test	14.4789	**0.0007**	**Causality detected**
2	Likelihood Ratio Test	8.6299	**0.0134**	**Causality detected**

Short-Term (Lag 1) Results: No Causality

a. The p-values at Lag 1 (p = 0.2001, 0.0909, 0.1128) indicate that in the very short term, tax revenue growth does not Granger-cause economic diversification.

b. This suggests that immediate changes in tax revenue do not lead to immediate diversification shifts.

Long-Term (Lag 2) Results: Causality Exists

a. The Chi-Square Test (p = 0.0007) and Likelihood Ratio Test (p = 0.0134) at Lag 2 show that tax revenue growth Granger-causes economic diversification at a 5% significance level.

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b. This means that in the long run, tax revenue growth influences diversification, likely due to improved tax policies, better sectoral investments, and economic restructuring over time.

4.7 Monte Carlo Simulation: Projected Tax Revenues

Year	Projected Oil Taxes (N' Billion)	Projected Non-Oil Taxes (N' Billion)
2022	2318.99	18582.27
2023	2519.818	20591.65
2024	2795.918	23016.6
2025	3065.291	25184.53
2026	3478.702	27894.46
2027	3895.57	30558.67
2028	4331.6	33412.06
2029	4790.56	37005.42
2030	5252.737	40758.6
2031	5835.035	44993.34

The Monte Carlo Simulation & Scenario Analysis was conducted to project the future trends of oil and non-oil tax revenues over the next 10 years (2022-2031) using historical growth patterns and uncertainty factors. The results provide insights into potential fiscal trajectories and their implications for economic diversification.

1. Projected Growth in Oil Tax Revenues

a. The model predicts a steady increase in oil tax revenues, reaching ₦3,478.70 billion by 2026, assuming historical volatility patterns persist.

b. However, due to the inherent fluctuations in oil prices and production cycles, these projections carry significant uncertainty.

c. Implication: Nigeria's fiscal sustainability remains vulnerable to oil market conditions, reinforcing the need for alternative revenue streams.

2. Stronger Growth in Non-Oil Tax Revenues

a. Non-oil tax revenue is projected to increase significantly, reaching approximately ₦27,894.45 billion by 2026.

b. This suggests a potentially stable and growing fiscal base, driven by improved tax administration, policy reforms, and economic diversification efforts.

c. Implication: Non-oil taxes will continue to outpace oil tax revenues, highlighting their increasing importance in Nigeria's economic structure.

3. Fiscal Implications for Economic Diversification

a. The projections indicate that non-oil tax contributions will remain the dominant revenue source in the long run, supporting Nigeria's diversification agenda.

b. However, sustained growth depends on effective policy execution, including:

i. Reducing tax evasion and broadening the formal tax base.

ii. Encouraging private sector growth to sustain non-oil tax contributions.

iii. Investing oil revenue surpluses into diversification projects.

V. Conclusion and Recommendations

Conclusion

This study has provided a sectoral analysis of oil and non-oil tax contributions in Nigeria and their implications for economic diversification. The findings align with the Resource Curse Theory (Auty, 1993), which suggests that economies heavily reliant on natural resource revenues often face growth volatility and structural imbalances. While oil tax revenues continue to play a significant role in government revenue generation, their volatility and susceptibility to external market shocks make them an unreliable long-term source of fiscal stability (Eboh & Ukpong, 2021). On the other hand, non-oil tax revenues have

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demonstrated more stable growth and are increasingly becoming a critical component of Nigeria's revenue structure (World Bank, 2021). This study has provided a sectoral analysis of oil and non-oil tax contributions in Nigeria and their implications for economic diversification. The findings reveal that while oil tax revenues continue to play a significant role in government revenue generation, their volatility and susceptibility to external market shocks make them an unreliable long-term source of fiscal stability. On the other hand, non-oil tax revenues have demonstrated more stable growth and are increasingly becoming a critical component of Nigeria's revenue structure.

The study established that non-oil tax contributions have a stronger and more sustainable impact on economic diversification compared to oil tax revenues, supporting the Fiscal Neutrality Theory (Ramsey, 1927), which argues that a balanced tax structure enhances economic efficiency and stability. The results from the Generalized Least Squares (GLS) regression and other econometric models indicate that a well-developed non-oil tax system significantly enhances Nigeria's economic stability and reduces reliance on the oil sector. The findings also confirm a long-term relationship between tax revenue diversification and economic growth, with non-oil tax contributions playing an instrumental role in achieving fiscal sustainability.

Despite the observed progress in non-oil tax revenue mobilization, several challenges remain, consistent with findings from Akinlo (2019) that inefficient tax administration and compliance issues hinder effective revenue generation in Nigeria. These include tax compliance issues, inefficient tax collection mechanisms, a narrow tax base, and weak enforcement policies. The study also highlights the need for further structural reforms to optimize tax revenue mobilization and enhance economic diversification efforts.

Recommendations

Based on the findings of this study and in line with the study's objectives, the following policy recommendations are proposed to enhance Nigeria's tax revenue system and promote economic diversification (Iyoha & Oriakhi, 2017).

a. Strengthening Non-Oil Tax Revenue Mobilization: The Nigerian government should intensify efforts to broaden the non-oil tax base by encouraging formal sector participation and reducing tax evasion. Tax administration should be modernized through the adoption of digital tax collection platforms to improve efficiency and reduce leakages. Simplifying tax procedures and offering incentives for tax compliance will encourage higher voluntary participation by businesses and individuals.

b. Tax incentives for non-oil industries: The Nigerian government should introduce innovative tax incentives for non-oil industries in order to encourage more voluntary compliance.

c. Reducing Dependency on Oil Tax Revenue: Diversification of the economy should be a top priority, with increased investments in non-oil sectors such as manufacturing, agriculture, and services. Government should reinvest a portion of oil tax revenues into infrastructure, education, and industrial development to create alternative revenue-generating sectors. Establishing a sovereign wealth fund can help manage oil revenue fluctuations and ensure that oil earnings contribute to long-term national development.

d. Enhancing Tax Policy and Governance: The Federal Inland Revenue Service (FIRS) and other tax authorities should strengthen enforcement mechanisms to minimize tax evasion and avoidance. Tax policy reforms should focus on improving transparency, accountability, and efficiency in tax collection processes. Regular audits and impact assessments should be conducted to evaluate the effectiveness of tax policies in promoting economic diversification.

e. Promoting Private Sector Growth: The government should create an enabling business environment by reducing bureaucratic bottlenecks, providing tax incentives, and supporting entrepreneurship. Strengthening public-private partnerships (PPPs) will facilitate investments in key sectors that can drive non-oil revenue generation. Financial inclusion policies should be enhanced to encourage small and medium enterprises (SMEs) to formalize their businesses and contribute to tax revenues.

f. Improving Data Collection and Fiscal Planning: The Nigerian government should invest in data analytics and fiscal intelligence to improve tax forecasting and policy formulation. A centralized tax database should be developed to enhance real-time tracking of tax revenue collection and economic diversification trends. Policymakers should adopt evidence-based decision-making in tax policy formulation to align with global best practices.

Implications of the Study:

The study confirms that a well-structured tax policy, emphasizing non-oil tax growth, is fundamental to achieving sustainable economic diversification (Adedeji & Campbell, 2020). The results support existing literature that a broad tax base minimizes fiscal instability and fosters economic growth (IMF, 2022). While oil tax revenues have historically been a dominant source of government income, their inherent volatility necessitates a gradual transition towards a stronger non-oil tax regime (KPMG, 2022). The findings of this study underscore the need for a strategic shift towards a more diversified and sustainable tax revenue structure in Nigeria. While oil tax revenues have historically been a dominant source of government income, their inherent volatility necessitates a gradual transition towards a stronger non-oil tax regime. A comprehensive approach that includes tax policy reforms, improved governance, private sector engagement, and enhanced fiscal planning will be essential in achieving

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long-term economic diversification and financial stability.

Future research should focus on evaluating the effectiveness of specific tax policy interventions and identifying best practices for optimizing non-oil tax revenue growth in Nigeria. Additionally, an assessment of how international trade agreements and global economic conditions influence Nigeria's tax revenue structure would provide further insights into strengthening fiscal sustainability in the country.

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