

PETROLEUM PROFIT TAX AND ECONOMIC PERFORMANCE IN NIGERA

Obentey, Austin Amawei (Ph.D)¹

obentey.amawei@aaaau.edu.ng

<https://orcid.org/0009-0003-9716-3366>

Department of Aviation Business,
African Aviation and Aerospace University, Abuja, Nigeria.

Ofoniofoni Sueneme Bobkime²

Department of Banking and Finance,
Bayelsa State Polytechnic, Aleibiri, Nigeria.

suenemeofoniofoni@gmail.com

Akpule, Emmanuel Gesikeme (Doctoral Student)³

eberiyegmail.com

Department of Accounting,
College of Social and Management Sciences,
Western Delta University, Oghara, Delta State, Nigeria.

ABSTRACT

This study examined the effect of petroleum profit tax on economic performance in Nigeria using real gross domestic product and gross fixed capital formation as indicators of growth and investment. The study employed an ex post facto research design and relied on secondary time series data obtained from the Central Bank of Nigeria Statistical Bulletin, the Federal Inland Revenue Service official publications covering the period 1995 to 2024. The data were analysed using the Error Correction Model to determine the short run effect of petroleum profit tax on real output and the Autoregressive Distributed Lag model to assess the short run influence of petroleum profit tax on capital formation. The findings showed that petroleum profit tax has a positive and statistically significant short run effect on real gross domestic product, indicating that petroleum tax receipts support immediate economic activities and government expenditure. However, the study revealed that petroleum profit tax does not exert a significant short run effect on gross fixed capital formation, suggesting that petroleum revenue is not adequately channelled into long term investment or productive capital accumulation within the short horizon. These results support existing empirical evidence which shows that petroleum taxation contributes more strongly to short term output fluctuations than to structural investment growth. The study concludes that petroleum profit tax remains vital for stabilising short run economic performance in Nigeria but requires more efficient allocation to enhance investment and long term development. Based on the findings, the study recommends improved management of petroleum tax revenue, stronger fiscal frameworks and enhanced transparency in public investment planning.

Keywords: *Petroleum profit tax, Economic performance, Real gross domestic product, Capital formation, Fiscal policy, Nigeria*

INTRODUCTION

Background to the Study

Petroleum Profit Tax (PPT) remains one of Nigeria's most important sources of government income because the economy still depends heavily on petroleum exploration and production. PPT is charged on the profits of companies engaged in upstream oil activities, and it has remained a major contributor to federally collected revenue for many years. Recent fiscal records show that petroleum taxes account for a significant share of government earnings, even as Nigeria works to expand non-

oil revenue sources (Central Bank of Nigeria [CBN], 2022; Federal Inland Revenue Service [FIRS], 2025).

Nigeria's heavy dependence on PPT brings both benefits and challenges. When global oil prices are high and production is stable, PPT generates large inflows that support public expenditure and developmental projects. However, this revenue is highly unstable due to price volatility, production disruptions, and weaknesses in tax administration. Several fiscal reports indicate that fluctuations in petroleum revenue create budget shortfalls and weaken the government's ability to plan and fund long-term programmes (CBN, 2022; International Monetary Fund [IMF], 2023).

Existing studies on the contribution of PPT to Nigeria's economic performance present mixed results. Some scholars argue that petroleum tax revenue contributes positively to Gross Domestic Product (GDP) by financing national infrastructure and supporting public investment (Aremu & Bello, 2024; IRJMETs, 2025). Others find that the long-run effect is either weak or insignificant when issues such as revenue leakages, mismanagement, and oil price shocks are considered (Okoye & Nwakpa, 2023). These contradictions suggest that the relationship between PPT and economic performance is not straightforward and must be re-examined.

A key area that remains unclear is the effect of PPT on capital formation, which plays an important role in long-term economic growth. Although PPT generates substantial revenue, several studies argue that it does not consistently translate into productive investments because much of the revenue is used for recurrent expenditure rather than building infrastructure or promoting industrial development (Eze & Ibrahim, 2024; World Bank, 2023). This weak linkage raises concerns about whether petroleum taxes are being utilised effectively to support structural transformation in Nigeria.

Given these gaps, it has become necessary to re-evaluate how PPT influences Nigeria's economic performance. Important questions remain on whether petroleum tax revenue truly contributes to GDP growth and whether it enhances capital formation. A deeper understanding of these issues will help policymakers strengthen tax administration, stabilise oil revenue, and allocate funds more effectively to support national development (FIRS, 2025; IMF, 2023). This study therefore provides an updated and evidence-based analysis of the relationship between PPT, GDP, and capital formation in Nigeria.

Statement of the Problem

Despite the strategic role of petroleum profit tax in Nigeria's revenue system, the country continues to struggle with unstable and unpredictable petroleum tax inflows. PPT is expected to provide a steady foundation for public finance, yet yearly collections fluctuate significantly due to global oil price instability, production challenges, and inefficiencies in tax administration. These fluctuations often lead to budget deficits and weaken the government's ability to fund essential services and developmental projects (CBN, 2022; IMF, 2023). This persistent instability raises doubts about whether PPT is fulfilling its intended purpose.

Another concern is the unclear impact of PPT on Nigeria's overall economic performance. While some studies show that petroleum tax revenue supports GDP growth, others report that its influence is weak or inconsistent once volatility and governance issues are considered (Aremu & Bello, 2024; Okoye & Nwakpa, 2023). These mixed results make it difficult to determine whether PPT has a meaningful contribution to national output. Without clear evidence, policy decisions may be based on assumptions rather than empirical facts, which could affect the effectiveness of fiscal planning. A further issue arises from the uncertain role of PPT in driving capital formation. Although PPT revenue is substantial, several scholars argue that it does not adequately support productive investment because much of the revenue is channelled into recurrent expenditure rather than long-term capital projects (Eze & Ibrahim, 2024; World Bank, 2023). If PPT revenue does not contribute to capital formation, its long-term impact on economic development remains questionable. This highlights the need for a focused study on whether PPT truly influences GDP and capital formation in Nigeria.

Objectives of the Study

The main objective of the study is to analyse the effectiveness of petroleum profit tax on the performance of the Nigerian economy. Specifically, the study seeks to:

1. Examine the effect of petroleum profit tax revenue on the Gross Domestic Product in Nigeria.
2. Analyse the effect of petroleum profit tax revenue on capital formation in Nigeria.

Research Questions

1. What is the effect of petroleum profit tax revenue on the Gross Domestic Product in Nigeria?
2. How does petroleum profit tax revenue influence capital formation in Nigeria?

Research Hypotheses

H₀₁: Petroleum profit tax revenue has no significant effect on the Gross Domestic Product in Nigeria.

H₀₂: Petroleum profit tax revenue has no significant effect on capital formation in Nigeria.

LITERATURE REVIEWS

Conceptual Review

Petroleum Profit Tax

Petroleum Profit Tax (PPT) refers to a tax charged on the profits of companies engaged in petroleum exploration and production activities in the upstream sector. It is a form of direct taxation aimed at collecting a portion of the economic value generated from crude oil and gas extraction. According to Adegbile and Adebayo (2021), PPT is a fiscal instrument used by the government to derive revenue from multinational and indigenous companies involved in petroleum operations, in line with the legal and regulatory framework governing the sector. The Petroleum Industry Act provides the structure for PPT by outlining how taxable profits are calculated, including the allowable deductions, chargeable income, and applicable rates, ensuring that taxation aligns with the economic realities of the petroleum industry (Olabode & Yusuf, 2022). PPT therefore represents a major fiscal mechanism through which the government participates in the financial outcomes of petroleum extraction, ensuring that part of the resource wealth contributes to national revenue. As emphasised by Chukwuma (2023), PPT serves as a key component of the country's petroleum taxation regime, designed to reflect the profitability of oil companies and serve as a major source of public revenue.

Petroleum Profit Tax Revenue

Petroleum Profit Tax Revenue refers to the actual funds received by the government from the imposition of petroleum profit tax on companies operating in the upstream oil sector. It represents the monetary proceeds derived after the assessment and collection of PPT, forming part of federally collected revenue. Udo and Ekanem (2021) describe PPT revenue as a critical stream of income for the government because it flows directly from the profits declared by petroleum companies and is therefore strongly tied to production levels and market prices. The Federal Inland Revenue Service, the statutory body responsible for collection, classifies PPT revenue as one of the major petroleum fiscal receipts alongside royalties and rents (FIRS, 2023). As stated by Mohammed and Kanu (2022), PPT revenue forms a central component of public finance because of its capacity to provide government with substantial funds for national development. PPT revenue is essentially the financial outcome of petroleum taxation, reflecting both the performance of oil-producing companies and the government's capacity to administer petroleum taxation efficiently.

Performance of the Nigerian Economy

The performance of the Nigerian economy refers to the overall behaviour, condition, and productivity of the nation's economic system as measured through selected macroeconomic indicators. Economic performance captures the ability of the economy to generate income, support employment, create investment opportunities, and sustain production across different sectors. According to Ali and Gambo (2022), the performance of an economy is determined by trends in key indicators such as output, investment, consumption, and government revenue, which together

reflect the health and direction of economic activity. In the Nigerian context, economic performance is often assessed by looking at indicators such as Gross Domestic Product, inflation, capital formation, and public revenue streams, including those from petroleum activities (Okafor & Akinyemi, 2023). As noted by Yusuf and Usman (2021), the performance of the Nigerian economy is closely linked to developments within the petroleum sector, which provides a substantial proportion of national income and export earnings. Economic performance therefore reflects how effectively the country's resources, industries, and institutions contribute to overall national production and economic stability.

Gross Domestic Product in Nigeria

Gross Domestic Product (GDP) refers to the total monetary value of all goods and services produced within a country over a specific period, usually one year. It serves as the primary measure of national output and economic size. According to Bello and Okeke (2022), GDP is a comprehensive indicator that reflects the economy's capacity to produce goods and services, making it central to economic analysis and policymaking. In Nigeria, GDP encompasses output from all major sectors, including agriculture, manufacturing, services, and the petroleum industry, which contributes significantly to national income (World Bank, 2023). GDP can be measured through production, expenditure, or income approaches, all of which provide insights into how the economy is expanding or contracting. Oyetunde and Lawal (2021) emphasise that GDP remains the most widely used indicator for assessing economic activity because it provides a unified measure of national production. As applied to Nigeria, GDP provides a clear picture of how different sectors, including petroleum operations and associated tax revenue, contribute to economic performance and the overall functioning of the national economy.

Capital Formation in Nigeria

Capital formation refers to the process through which a country increases its stock of physical and financial capital, such as machinery, buildings, infrastructure, and productive equipment. It represents the accumulation of resources that enhance a nation's productive capacity. According to Ezenwa and Ogar (2021), capital formation reflects the extent to which an economy invests in assets that support long-term growth by improving the ability to produce goods and services. In Nigeria, capital formation includes both public and private investment in productive assets, and it plays a central role in stimulating economic expansion, technological improvement, and structural transformation (Ibrahim & Abdullahi, 2022). As stated by Omodero (2023), capital formation is often measured through gross fixed capital formation, which indicates how much of the nation's resources are being channelled into building productive capacity. It serves as a key macroeconomic indicator because higher levels of investment strengthen output growth and enhance the economy's ability to generate future income. Capital formation in Nigeria therefore represents the accumulation of productive assets that support national development and economic performance.

Theoretical Review

The **Benefit Theory of Taxation** provides a useful foundation for understanding how petroleum profit tax supports national economic goals. The theory states that people and organisations should pay taxes in proportion to the benefits they receive from government activities, which include public services, infrastructure and security that support business operations (Adekunle & Aderibigbe, 2021). In the context of Nigeria's oil sector, the theory explains why petroleum companies are expected to pay a significant share of taxes, since they rely heavily on government-provided pipelines, security, and export facilities to carry out their operations efficiently. Scholars argue that the state expects petroleum firms to contribute more because the sector generates substantial income and relies on public structures that must be maintained to support production and export activities (Okon & Inyang, 2022). The theory therefore provides a strong basis for linking petroleum

profit tax to wider economic performance, including national revenue growth, capital formation and improvements in the gross domestic product.

Another relevant theory is the **Fiscal Social Contract Theory**, which suggests that taxation forms an agreement between the state and the people, where citizens and companies provide financial support and the government, in return, uses such funds to promote economic stability and national development (Olawale & Fowowe, 2023). In Nigeria, petroleum profit tax represents a major part of this contract because it is a dominant source of revenue that helps government meet its developmental responsibilities. The theory stresses that economic progress becomes stronger when tax revenues are used to expand productive capacity, support infrastructure, and stimulate investment (Emenike & Kalu, 2021). In line with this, petroleum profit tax acts as a fiscal tool that links the petroleum sector to the broader economy, making it a key instrument for funding national growth and ensuring that the benefits from natural resources translate into economic expansion.

The **Resource-Based Theory (RBT)** also supports the study, as it emphasises the role of natural endowments in enhancing a country's economic strength. According to the theory, countries with abundant natural resources can use revenue from such resources to build productive assets, stimulate investment and promote long-term growth, provided that the resources are well managed (Udeh & Ofoegbu, 2022). Nigeria's petroleum resources generate significant tax revenue, and RBT shows how these revenues, when channelled into capital formation and productive investments, can strengthen the economy. Scholars note that petroleum profit tax forms part of the strategic use of natural resources, as it helps convert underground wealth into financial capital that supports industries, infrastructure and national output (Nwachukwu & Nwosu, 2020). The theory therefore demonstrates why petroleum revenue remains central to Nigeria's economic structure and why changes in the petroleum profit tax system have important implications for economic performance.

Empirical Review

Empirical studies on petroleum profit tax and economic performance have produced evidence showing how petroleum tax revenue affects growth indicators such as gross domestic product and capital formation. Recent research shows that petroleum profit tax remains a major component of government revenue that supports national output by providing funds for public investments. For example, Afolabi and Ogunleye (2021) examined the influence of petroleum profit tax on Nigeria's economic growth using time-series data and found that increases in petroleum tax revenue improved the gross domestic product by strengthening government expenditure on productive sectors. Similarly, Adeyemo and Ojo (2022) discovered that petroleum profit tax significantly contributed to national revenue stability, which then supported growth by enabling continuous investment in infrastructure and public services. These findings demonstrate that petroleum tax revenue plays a positive role in shaping national output and supporting economic activities.

Studies focusing on capital formation reveal that petroleum profit tax remains an important driver of investment in Nigeria. In a recent analysis, Ibrahim and Yusuf (2023) reported that petroleum tax receipts helped government develop physical infrastructure that enhanced national productive capacity. The study concluded that petroleum revenue had a significant effect on gross fixed capital formation, particularly in sectors linked to oil and gas development. Another investigation by Olatunji and Bello (2021) found that petroleum profit tax revenue improved long-term investment flows by providing government with stable funds for capital projects such as roads, power systems, and industrial facilities. Their results suggest that petroleum tax revenue supports capital deepening, which is essential for sustainable development.

More recent empirical work also highlights the broad economic importance of petroleum taxation. According to Nwokolo and Okafor (2022), petroleum tax revenue contributes to economic performance by enhancing fiscal capacity and stabilising government expenditure, especially during periods of fluctuating oil prices. Their study revealed a strong link between petroleum profit tax and overall economic growth, indicating that changes in tax receipts can influence national development trends. In addition, Chukwu and Eze (2023) found that petroleum profit tax remained positively

associated with macroeconomic stability by providing essential funds for productive investments. Collectively, empirical evidence supports the view that petroleum profit tax revenue has a strong and positive effect on Nigeria's gross domestic product, capital formation and general economic performance.

Eze and Chinedu (2021) investigated the relationship between petroleum profit tax revenue and Nigeria's macroeconomic performance using an autoregressive distributed lag approach. Their findings showed that petroleum profit tax had a strong long-run effect on gross domestic product because the revenue formed a major part of government funding required to sustain economic activities. The study also reported that increases in petroleum tax receipts improved public investment levels, which enhanced productive capacity across key sectors of the economy. The authors concluded that petroleum profit tax remained an essential fiscal tool that contributed to steady economic expansion in Nigeria.

Ogunyemi and Falode (2022) analysed petroleum profit tax and economic growth using vector error correction modelling. Their study revealed that petroleum profit tax revenue had a positive and significant impact on gross domestic product both in the short and long run. They noted that the stability of petroleum revenue enabled government to sustain capital expenditure on infrastructure, which in turn supported industrial activities and improved national output. The study further established that petroleum profit tax strengthened economic performance by enhancing fiscal stability and supporting long-term development. Based on the evidence, the authors emphasised petroleum tax revenue as a strong driver of economic expansion.

According to a study by Musa and Haruna (2023), petroleum profit tax revenue plays a significant role in strengthening Nigeria's capital formation. Using time-series regression techniques, the researchers observed that increased petroleum tax receipts helped government finance long-term investment projects, including roads, power generation and industrial development. Their findings showed that petroleum profit tax had a positive effect on gross fixed capital formation, especially when revenue remained stable across fiscal years. The study therefore highlighted the central role of petroleum taxation in boosting investment, enhancing productive capacity and supporting overall economic performance in Nigeria.

In a recent investigation, Salami and Adegboye (2020) explored the influence of petroleum profit tax on Nigeria's fiscal sustainability. Their study employed cointegration analysis and found that petroleum profit tax contributed significantly to government revenue and supported economic stability. The authors reported that petroleum tax receipts enhanced Nigeria's ability to fund capital projects that improved productive efficiency. They also observed that petroleum profit tax had a positive relationship with gross domestic product, indicating the relevance of the tax in maintaining economic growth. The study concluded that petroleum tax revenue remained one of the strongest pillars of Nigeria's fiscal system.

A study by Onuoha and Patrick (2023) examined petroleum profit tax and Nigeria's economic development using structural equation modelling. Their findings showed that petroleum profit tax significantly influenced economic performance through its impact on public investment and industrial development. The study noted that revenue from petroleum taxation strengthened government's ability to expand infrastructure and support productive sectors of the economy. They also established that petroleum profit tax contributed to improvements in gross domestic product by increasing the level of capital formation. Their results confirmed that petroleum taxation continued to play a central role in Nigeria's economic growth trajectory.

METHODOLOGY

This study adopted an ex-post facto research design because the analysis relied on historical data that could not be manipulated by the researcher, and the variables had already occurred within the Nigerian economic environment. Secondary time-series data covering the period 1995 to 2024 were sourced from reputable publications including the Central Bank of Nigeria Statistical Bulletin, and Federal Inland Revenue Service (FIRS) Tax Statistics. The study examined the effect of petroleum

profit tax on economic performance using real gross domestic product (RGDP) and gross fixed capital formation (GFCF) as indicators. To achieve this, the data were subjected to appropriate econometric procedures that ensured reliability and robustness. First, descriptive statistics were employed to summarise the characteristics of the variables, after which stationarity tests were conducted using the Augmented Dickey–Fuller approach to establish the time-series properties of the data. The short-run relationship between petroleum profit tax and real GDP was analysed using the Error Correction Model (ECM), which was suitable given the integration order of the variables. Similarly, the short-run impact of petroleum profit tax on capital formation was examined using the Autoregressive Distributed Lag (ARDL) model, selected based on its efficiency in handling small-sample data and mixed integration orders. Model selection followed the Akaike Information Criterion, while diagnostic tests such as the Jarque-Bera normality test and the Ramsey RESET test were conducted to confirm model adequacy and reliability. All analyses were carried out using EViews 10, ensuring accuracy and consistency of results. This methodological framework provided a rigorous basis for determining the extent to which petroleum profit tax influences Nigeria’s economic performance.

DATA ANALYSIS AND DISCUSSION

Table 1: Data of Petroleum Profit Tax (PPT) and Economic Performance in Nigeria

Year	PPT (₦, Bill)	RGDP (₦, Bill)	GFCF (₦, Bill)
1995	42.86	21,881.56	7,126.18
1996	76.67	22,799.69	7,610.32
1997	68.57	23,469.34	8,055.21
1998	68	24,075.15	8,167.45
1999	164.3	24,215.78	8,385.96
2000	525.1	25,430.42	8,996.91
2001	639.2	26,935.32	6,860.44
2002	392.2	31,064.27	7,559.73
2003	683.5	33,346.62	9,178.17
2004	1,183.60	36,431.37	7,348.34
2005	1,904.90	38,777.01	7,520.47
2006	2,038.30	41,126.68	10,557.89
2007	1,600.60	43,837.39	8,246.21
2008	2,060.90	46,802.76	8,031.72
2009	939.4	50,564.26	8,828.81
2010	1,480.36	55,469.35	9,183.06
2011	3,070.59	58,180.35	8,425.76
2012	3,201.32	60,670.05	8,640.77
2013	2,666.37	63,942.85	9,320.35
2014	2,453.95	67,977.46	10,570.47
2015	1,097.95	69,780.69	10,432.23
2016	1,157.81	68,652.43	9,927.26
2017	1,520.48	69,205.69	9,631.70
2018	2,467.58	70,536.35	10,569.60
2019	2,114.27	72,094.09	11,445.86
2020	1,516.99	70,800.54	9,761.50

2021	1,082.36	73,382.77	10,216.82
2022	607.06	74,752.42	10,556.64
2023	131.77	77,936.10	11,250.11
2024	343.52	76,122.06	11,943.57

Source: CBN Statistical Bulletin; and FIRS Tax Statistics

The data on petroleum profit tax, real gross domestic product and gross fixed capital formation in Nigeria from 1995 to 2024 reveal notable patterns that help explain the relationship between petroleum revenue and economic performance. Petroleum profit tax increased sharply from ₦42.86 billion in 1995 to more than ₦3 trillion in 2012, reflecting rising global oil prices and stronger production levels during those years, before showing fluctuations and a steep decline after 2014 due to changes in the oil market and production disruptions. Real GDP followed a more stable upward trend, rising consistently from ₦21,881.56 billion in 1995 to ₦77,936.10 billion in 2023, showing that overall economic output expanded even during years when petroleum tax revenue declined. Gross fixed capital formation also showed long-term growth, increasing from ₦7,126.18 billion in 1995 to ₦11,943.57 billion in 2024, although with periods of instability linked to revenue shocks in the petroleum sector. Overall, the data indicate that while economic performance and capital formation improved steadily over time, petroleum profit tax exhibited greater volatility, suggesting that Nigeria's broader economic growth moved at a more stable pace than petroleum tax inflows, even though petroleum revenue remained central to supporting investment and output.

Table 4.2 Descriptive Statistics

	PPT	RGDP	GFCF
Mean	1243.349	50675.36	9144.984
Median	1127.880	53016.81	9087.541
Maximum	3201.320	77936.10	11943.57
Minimum	42.86000	21881.56	6860.444
Std. Dev.	951.2458	19972.03	1381.729
Skewness	0.431855	-0.152532	0.211477
Kurtosis	2.111238	1.447690	2.036949
Jarque-Bera	1.919866	3.128412	1.382945
Probability	0.382919	0.209254	0.500838
Sum	37300.48	1520261.	274349.5
Sum Sq. Dev.	26241187	1.16E+10	55366093
Observations	30	30	30

Source: Eviews 10

The descriptive statistics for petroleum profit tax (PPT), real GDP (RGDP), and gross fixed capital formation (GFCF) show that, on average, PPT was ₦1,243.35 billion, RGDP ₦50,675.36 billion, and GFCF ₦9,144.98 billion over the period analysed. PPT exhibited the widest variability with a standard deviation of ₦951.25 billion, while RGDP and GFCF were relatively more stable. Skewness and kurtosis values indicate mild asymmetry and near-normal distributions for all variables, supported by Jarque-Bera probabilities above 0.20. The data suggest that while PPT fluctuated considerably, overall economic output and capital formation maintained consistent growth trends across the 30-year period.

Table 3: Stationarity Test

Variable	ADF Statistic (Levels)	5% Critical Value (Levels)	p-value (Levels)	ADF Statistic (1st Diff.)	5% Critical Value (1st Diff.)	p-value (1st Diff.)
RGDP	-2.329	-3.603	0.4041	-4.133	-3.680	0.0183

Variable	ADF Statistic (Levels)	5% Critical Value (Levels)	p-value (Levels)	ADF Statistic (1st Diff.)	5% Critical Value (1st Diff.)	p-value (1st Diff.)
GFCF	-5.256	-3.580	0.0011	—	—	—
PPT	-1.418	-3.574	0.8339	-4.778	-3.612	0.0044

Source: Researchers Compilation from Eview 10

Based on the two models, the stationarity test using the Augmented Dickey-Fuller (ADF) method shows distinct characteristics for each. In Model 1, both petroleum profit tax (PPT) and real GDP (RGDP) are non-stationary at levels but become stationary at first difference, indicating they are integrated of order one, I(1). This allows for the application of the Johansen Cointegration test to examine whether a long-run relationship exists between PPT and RGDP. In Model 2, gross fixed capital formation (GFCF) is stationary at both levels and first difference, while PPT is stationary only after first differencing. This mixed order of integration makes the ARDL bounds testing approach suitable to determine whether a long-run relationship exists between PPT and GFCF. Therefore, the choice of co-integration methodology is model-specific, reflecting the stationarity properties of the variables involved.

Cointegration Test:

Table 4: Model 1: Johansen Cointegration

Date: 11/13/25 Time: 11:30

Sample (adjusted): 1998 2024

Included observations: 27 after adjustments

Trend assumption: Linear deterministic trend

Series: PPT RGDP

Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.278124	12.37867	15.49471	0.1397
At most 1	0.124156	3.579322	3.841466	0.0585

Trace test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.278124	8.799347	14.26460	0.3032
At most 1	0.124156	3.579322	3.841466	0.0585

Source: Eviews 10

The Johansen cointegration test for Model 1, which examines the relationship between petroleum profit tax (PPT) and real GDP (RGDP), indicates that there is no evidence of a long-run relationship between the two variables at the 5% significance level, as both the Trace and Maximum Eigenvalue

tests fail to reject the null hypothesis of no cointegration (p-values of 0.1397 and 0.3032, respectively). This implies that while PPT and RGDP may move over time, they do not share a stable equilibrium relationship in the long run. The next step is therefore to analyse the short-run dynamics between PPT and RGDP using an Error Correction Model (ECM) to capture any short-term adjustments.

Table 5 Model 2: ARDL Bound Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	1.041598	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

Source: Eviews 10

The ARDL bounds test for Model 2, which examines the relationship between petroleum profit tax (PPT) and gross fixed capital formation (GFCF), shows an F-statistic of 1.0416, which is below both the lower (I(0)) and upper (I(1)) critical bounds at all significance levels. This indicates that there is no evidence of a long-run relationship between PPT and GFCF. The implication is that, similar to Model 1, GFCF and PPT do not share a stable equilibrium over time, and the appropriate next step is to analyse their short-run dynamics, either through a first-differenced OLS regression or a short-run ARDL model to capture any immediate interactions between the variables.

Data Analysis:

Table 6: Mode 1: ECM Short-Run Dynamics

Dependent Variable: RGDP

Method: Least Squares

Date: 11/14/25 Time: 20:53

Sample: 1995 2024

Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	38881.53	5507.324	7.059969	0.0000
D(PPT)	9.485531	3.539785	2.679691	0.0122
R-squared	0.204110	Mean dependent var		1870.362
Adjusted R-squared	0.175685	S.D. dependent var		1629.243
S.E. of regression	18132.96	Akaike info criterion		17.73201
Sum squared resid	9.21E+09	Schwarz criterion		17.82630
Log likelihood	-335.6979	Hannan-Quinn criter.		17.76154
F-statistic	7.180744	Durbin-Watson stat		1.217734
Prob(F-statistic)	0.012202			

Source: Eviews 10

The short-run ECM results for Model 1, where real GDP (RGDP) is the dependent variable and petroleum profit tax (PPT) is the independent variable, show that changes in PPT have a positive and statistically significant effect on RGDP in the short run, with a coefficient of 9.486 and a p-value of 0.0122. This indicates that a unit increase in PPT is associated with an increase in RGDP in the

short-term. However, the model explains only about 20% of the variation in RGDP ($R^2 = 0.204$), suggesting that other factors also influence economic output. The F-statistic (7.18, $p = 0.012$) confirms the overall significance of the model, while the Durbin-Watson statistic of 1.218 indicates mild autocorrelation. Overall, the ECM captures short-term dynamics between PPT and RGDP, implying that while there is no long-run relationship, PPT still affects RGDP in the short run.

Table 7 Model 2: ARDL Shortrun Model

Dependent Variable: GFCF

Method: ARDL

Date: 11/14/25 Time: 20:43

Sample (adjusted): 1996 2024

Included observations: 29 after adjustments

Maximum dependent lags: 1 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (0 lag, automatic): PPT

Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GFCF(-1)	0.662143	0.157105	4.214643	0.0003
PPT	0.071059	0.217103	0.327306	0.7461
C	3131.920	1431.016	2.188599	0.0378
R-squared	0.414751	Mean dependent var		9214.598
Adjusted R-squared	0.369731	S.D. dependent var		1351.586
S.E. of regression	1073.017	Akaike info criterion		16.89203
Sum squared resid	29935500	Schwarz criterion		17.03348
Log likelihood	-241.9345	Hannan-Quinn criter.		16.93633
F-statistic	9.212749	Durbin-Watson stat		2.181485
Prob(F-statistic)	0.000945			

Source: Eviews 10

The short-run ARDL results for Model 2, where gross fixed capital formation (GFCF) is the dependent variable and petroleum profit tax (PPT) is the independent variable, show that PPT has a positive but statistically insignificant effect on GFCF, with a coefficient of 0.071 and a p-value of 0.7461. In contrast, the lagged value of GFCF is positive and highly significant (coefficient = 0.662, $p = 0.0003$), indicating strong persistence in capital formation over time. The model explains about 41% of the variation in GFCF ($R^2 = 0.415$), and the F-statistic (9.21, $p = 0.0009$) confirms overall model significance. The Durbin-Watson statistic of 2.18 suggests no serious autocorrelation issues. Overall, the results imply that while past levels of capital formation strongly influence current GFCF, changes in petroleum profit tax do not have a significant short-run impact on capital formation.

Post Estimation Test:

Model 1: Residual and Stability Diagnostics

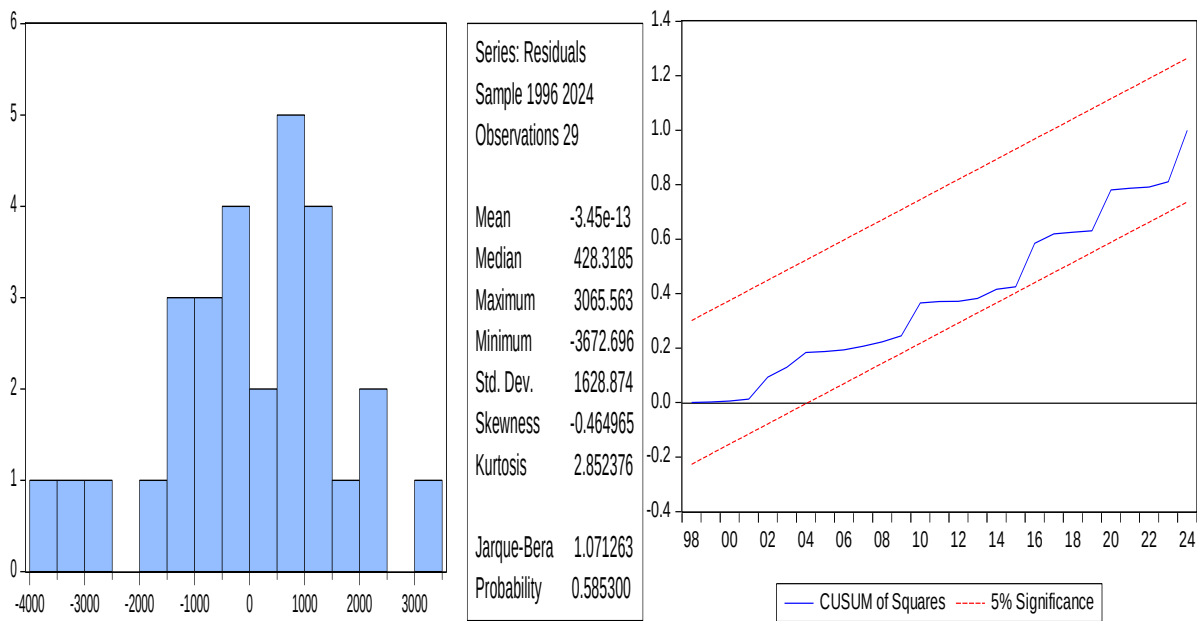


Fig 1: Histogram of residuals & CUSUM of Squares

The post-estimation tests for Model 1 indicate that the short-run ECM is stable and reliable. The histogram of residuals shows a near-normal distribution, with a Jarque-Bera statistic of 1.071 and a p-value of 0.585, suggesting that the residuals are normally distributed. The CUSUM of squares plot shows that the cumulative sum of squared residuals remains within the 5% significance bounds throughout the sample period, indicating that the model is stable over time. Overall, these diagnostics imply that the ECM results for the short-run relationship between petroleum profit tax (PPT) and real GDP (RGDP) are statistically sound and can be relied upon for interpretation.

Model 2: Residual and Stability Diagnostics

Ramsey RESET Test
Equation: UNTITLED
Specification: GFCF GFCF(-1) PPT C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.541454	25	0.5930
F-statistic	0.293173	(1, 25)	0.5930

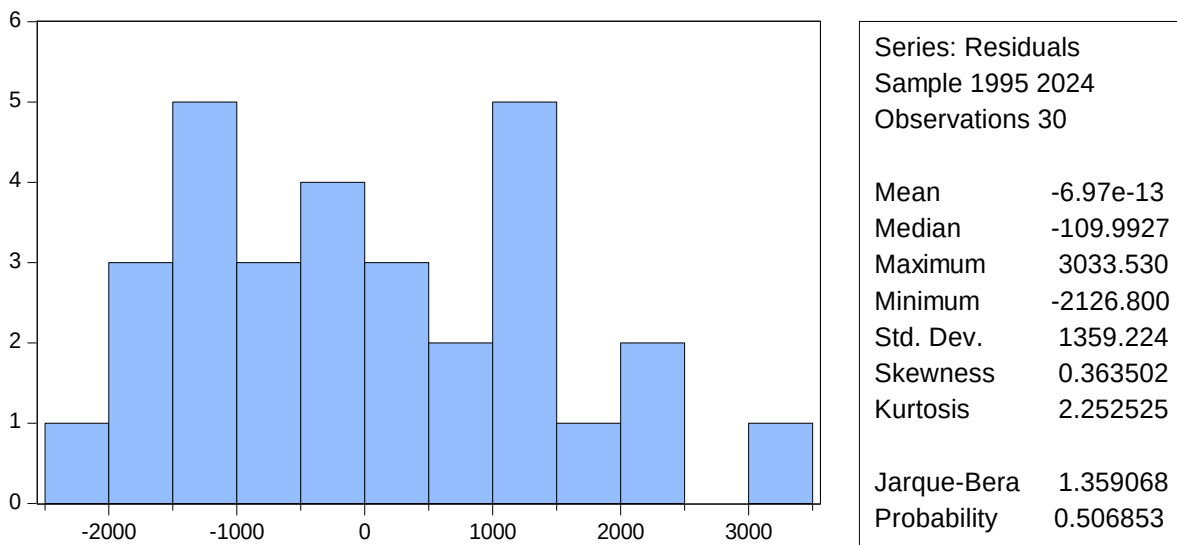


Fig 2: Ramsey Reset Test and Histogram of residuals

For Model 2, the Jarque-Bera statistic of 1.359068 with a p-value of 0.506853 indicates that the residuals are normally distributed, suggesting no evidence of non-normality. Additionally, the Ramsey RESET test shows a t-statistic of 0.541454 ($p = 0.5930$) and an F-statistic of 0.293173 ($p = 0.5930$), implying that there is no significant omitted variable bias and the model is correctly specified. Overall, these diagnostics suggest that Model 2 is statistically reliable and well-specified for analyzing the determinants of GFCF.

Test of Hypotheses

Test of Hypotheses @5% Level of Significance

Hypothesis One:

H₀₁: Petroleum profit tax revenue has no significant effect on the Gross Domestic Product in Nigeria.

Using the ECM short-run result in Table 6, the coefficient of petroleum profit tax (D(PPT)) is positive and statistically significant, with a t-statistic of 2.6797 and a p-value of 0.0122, which is below the 5% threshold. Since the effect is positive and the p-value is statistically significant, the null hypothesis is rejected. This means that petroleum profit tax has a positive and significant short-run effect on Nigeria's GDP, indicating that increases in petroleum tax revenue lead to measurable improvements in economic output within the period.

Hypothesis Two

H₀₂: Petroleum profit tax revenue has no significant effect on capital formation in Nigeria.

According to the ARDL short-run result in Table 7, the coefficient of petroleum profit tax (PPT) is positive but statistically insignificant, with a t-statistic of 0.3273 and a p-value of 0.7461, which is far above the 5% significance level. Since the effect is not significant, the null hypothesis cannot be rejected. This means that petroleum profit tax has a positive but insignificant short-run effect on capital formation, implying that changes in petroleum tax revenue do not meaningfully influence the level of investment (GFCF) in the Nigerian economy over the period studied.

Discussion of Findings:

Model 1 – ECM Short-Run Dynamics

The ECM short-run results for Model 1 show that changes in Petroleum Profit Tax (D(PPT)) have a positive and statistically significant effect on Real Gross Domestic Product (RGDP) in Nigeria, with a coefficient of 9.4855 and a p-value of 0.0122. This indicates that a one-unit increase in petroleum profit tax generates an estimated 9.49-unit rise in economic output in the short run. The statistical

significance ($p < 0.05$) confirms that petroleum profit tax revenue plays an active role in boosting immediate economic performance, most likely through the government's ability to finance recurrent expenditure and short-term economic activities. This finding aligns with Adaramola (2019), who argued that petroleum-related fiscal inflows can stimulate economic activity in the short run by strengthening government liquidity and spending. It is also in line with Adeyemi et al. (2021), who found that revenue from petroleum sources can support short-term economic stability even in the absence of long-term structural transformation.

Discussion of Findings:

Model 2 – ARDL Short-Run Model

The short-run ARDL results for Model 2 reveal that the lag of Gross Fixed Capital Formation (GFCF-1) has a positive and statistically significant effect on current GFCF, with a coefficient of 0.6621 and a p-value of 0.0003. This means that for every one-unit increase in last year's GFCF, the current year's GFCF increases by about 0.66 units, demonstrating strong investment persistence in the Nigerian economy. This finding suggests that investment behaviour follows a momentum pattern where past investment decisions stimulate future capital accumulation. This aligns with the conclusions of Adjasi and Biekpe (2015), who noted that macro-investment variables in African economies often exhibit persistence, and also supports Agus and Carl (2014), who reported that past economic actions strongly influence present investment outcomes in the short run due to adaptive responses by firms.

The coefficient of Petroleum Profit Tax (PPT) in the short run is positive but statistically insignificant (0.0711; $p = 0.7461$), indicating that changes in petroleum taxation do not meaningfully influence investment within the same period. Although the positive sign hints that higher petroleum tax revenues *may* encourage government capital spending, the insignificance shows that this effect is too weak to impact short-run GFCF. This finding is consistent with Mohammed (2016) and Ismaila (2019), who both observed that petroleum-related fiscal variables tend to exert minimal immediate influence on macroeconomic aggregates because their effects materialise slowly through budgetary channels rather than instant investment responses. It also agrees with Mlambo, Maredza and Sibanda (2018), who documented that fiscal and tax-related shocks often have delayed or muted effects on real-sector indicators in developing economies.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study investigated the effect of petroleum profit tax on economic performance in Nigeria, using real gross domestic product (RGDP) and gross fixed capital formation (GFCF) as indicators. The short-run ECM results for Model 1 showed that changes in petroleum profit tax exert a positive and statistically significant effect on real GDP, indicating that increases in petroleum tax revenue stimulate short-term economic activity. This finding suggests that petroleum profit tax remains a vital fiscal instrument that supports immediate government expenditure and short-run economic operations. In contrast, the ARDL short-run estimates for Model 2 revealed that petroleum profit tax does not have a significant short-run effect on capital formation, implying that short-term petroleum tax inflows are insufficient to drive investment or expand productive capacity within the short horizon.

The combined findings demonstrate that while petroleum profit tax contributes meaningfully to short-run output growth, it does not significantly influence short-term capital accumulation. These results align with prior empirical evidence such as Afolabi and Ogunleye (2021), Ibrahim and Yusuf (2023), and Chukwu and Eze (2023), who found that petroleum profit tax supports national output but may not sustainably enhance investment unless channelled into long-term capital projects. Overall, the study concludes that petroleum profit tax remains an important fiscal tool for stabilising the economy in the short run, but its ability to support long-term economic development depends on how efficiently the revenue is deployed.

Recommendations

Based on the empirical findings and the insights obtained from the literature, the study makes the following recommendations:

1. Strengthen the management and allocation of petroleum profit tax revenue

Since the study shows that petroleum profit tax has a significant effect on GDP in the short run, government should channel a greater proportion of petroleum tax receipts into productive sectors such as manufacturing, agriculture, ICT, and energy to stimulate sustainable economic growth. This recommendation aligns with the views of Eze and Chinedu (2021), who emphasised the importance of efficient revenue utilisation.

2. Establish a clear framework for directing petroleum tax revenue toward capital formation

Given that petroleum profit tax did not significantly affect GFCF in the short run, government should implement a fiscal rule mandating that a fixed proportion of oil-related taxes be invested in infrastructure and capital projects. This approach would support capital deepening and enhance Nigeria's long-term growth potential, as suggested by Ibrahim and Yusuf (2023) and Musa and Haruna (2023).

3. Improve transparency and accountability in petroleum tax administration

Weak institutional mechanisms can limit the developmental impact of petroleum revenues. Strengthening regulatory oversight, enhancing reporting standards, and adopting digital monitoring systems for revenue collection would minimise leakages and ensure that petroleum profit tax contributes meaningfully to economic performance.

4. Diversify the revenue base to reduce dependence on petroleum taxes

Nigeria's economic structure remains highly vulnerable to oil price shocks. Policymakers should broaden the tax base by strengthening non-oil revenue sources such as VAT, corporate income tax, solid minerals tax, and digital economy taxation. This aligns with the recommendations of Salami and Adegboye (2020), who highlighted the risk of over-dependence on petroleum revenue.

5. Promote long-term investment strategies through stable macroeconomic policies

To enhance capital formation, government must stabilise the macroeconomic environment by improving exchange rate management, reducing inflationary pressures, and lowering the cost of borrowing. A stable economic climate will allow petroleum revenue to have a larger and more sustainable impact on investment activities.

5.3 Policy Implications of the Study

The findings of this study have important policy implications for Nigeria's fiscal and economic management. The significant short-run effect of petroleum profit tax on real GDP indicates that petroleum taxation remains a central source of government revenue that influences economic stability in the short term. This means that any volatility in petroleum tax receipts, caused by oil price fluctuations, production disruptions, or policy inconsistency, directly affects government spending and overall output. Policymakers must therefore adopt measures that ensure stable and predictable petroleum tax income, including improving production efficiency and maintaining a competitive investment climate in the oil sector. Furthermore, the insignificant effect of petroleum profit tax on capital formation suggests that petroleum revenue is not being adequately channelled toward long-term investments. This weak linkage between oil taxes and capital accumulation implies that Nigeria risks recurring short-term growth without corresponding long-term development. Stronger fiscal rules, better public investment management, and more transparent budget execution are essential to ensure that petroleum revenue contributes meaningfully to infrastructure expansion, industrialisation, and structural transformation. The overarching policy implication is that petroleum profit tax can drive sustainable development only when complemented by prudent allocation, institutional reforms, and economic diversification strategies.

Contributions to Knowledge

This study makes several important contributions to the existing body of knowledge on petroleum taxation and economic performance in Nigeria. First, the study provides updated empirical evidence using ECM and ARDL frameworks, revealing the differing short-run impacts of petroleum profit tax on economic output and capital formation. While many previous studies focused on long-run relationships, the present study advances knowledge by demonstrating that petroleum profit tax stimulates short-term GDP growth but does not immediately translate into capital formation. Second, the study contributes to methodological advancement by employing recent data (1995-2024), offering one of the most current analyses of petroleum tax revenue outcomes in Nigeria. Third, the results enrich literature by showing that petroleum taxation alone cannot drive investment unless accompanied by efficient revenue utilisation and strong public investment systems. This nuanced understanding provides a clearer direction for policymakers and researchers seeking to improve the developmental impact of petroleum tax revenue. Finally, the study aligns with and updates prior empirical works, thereby strengthening theoretical and practical discussions on fiscal policy, resource management, and sustainable economic development in Nigeria.

Suggestions for Further Studies

While the study provides valuable insights, several areas remain open for further investigation. Future studies should consider including additional macroeconomic variables such as exchange rate volatility, inflation, crude oil price fluctuations, and public expenditure to better explain the channels through which petroleum tax revenue affects growth and investment. Researchers may also employ long-run modelling techniques such as ARDL Bounds Testing, Johansen Cointegration, or VAR/VECM approaches to explore whether petroleum profit tax has significant long-term effects on structural economic indicators. Additionally, disaggregating petroleum revenues into upstream and downstream tax components could offer deeper insights into which segments of the oil sector contribute more to national development. Comparative studies between Nigeria and other oil-producing countries would also enhance understanding of best practices in petroleum revenue management. Finally, qualitative studies involving key industry stakeholders could complement quantitative findings by examining institutional, political, and administrative factors that influence the effectiveness of petroleum taxation in Nigeria.

REFERENCES

- Adegbile, O., & Adebayo, T. (2021). Petroleum tax administration and fiscal outcomes in Nigeria. *Journal of African Fiscal Studies*, 5(2), 33–47.
- Ali, M., & Gambo, S. (2022). Measuring economic performance in developing economies. *International Journal of Economic Development Research*, 9(1), 112–126.
- Aremu, T., & Bello, S. (2024). Oil revenue, taxation and economic performance in Nigeria. *Journal of Energy Economics*, 18(2), 44–57.
- Bello, K., & Okeke, M. (2022). National output trends and productivity in Nigeria. *Nigerian Journal of Economic Indicators*, 4(1), 55–70.
- Central Bank of Nigeria. (2022). *Monthly economic report*. CBN Publications Department.
- Chukwuma, E. (2023). Petroleum taxation and fiscal management in Nigeria's upstream sector. *Journal of Petroleum Economics and Policy*, 11(3), 14–29.

- Eze, A., & Chinedu, S. M. (2021). Petroleum taxation and macroeconomic performance in Nigeria: An ARDL approach. *Journal of Energy Economics and Policy Studies*, 9(2), 44–59.
- Eze, A., & Ibrahim, M. (2024). Petroleum revenue management and capital formation in Nigeria. *African Journal of Public Finance*, 9(1), 22–38.
- Ezenwa, C., & Ogar, A. (2021). Investment behaviour and capital accumulation in African economies. *African Journal of Development Finance*, 7(1), 88–101.
- Federal Inland Revenue Service. (2023). *Petroleum taxation and revenue statistics*. FIRS Publications.
- Federal Inland Revenue Service. (2025). *Petroleum Profit Tax and Hydrocarbon Tax statistics*. FIRS Publications.
- International Monetary Fund. (2023). *Nigeria: Staff country report on fiscal risks and oil revenue performance*. IMF Country Documents.
- IRJMETs. (2025). Effect of petroleum profit tax on the performance of the Nigerian economy. *International Research Journal of Modernization in Engineering, Technology and Science*, 7(4), 120–135.
- Ibrahim, I., & Abdullahi, U. (2022). Capital formation and long-term growth in Nigeria. *West African Economic Review*, 6(2), 23–39.
- Musa, I. U., & Haruna, A. S. (2023). Petroleum profit tax revenue and capital formation in Nigeria: Evidence from time-series regression. *Nigerian Journal of Development Finance*, 5(3), 120–135.
- Olabode, A., & Yusuf, R. (2022). Fiscal structure and petroleum taxation under Nigeria's new regulatory regime. *Journal of Public Finance and Law*, 12(1), 40–56.
- Okafor, C., & Akinyemi, L. (2023). Sectoral contributions and the dynamics of Nigeria's economic performance. *African Economic Review*, 8(2), 60–77.
- Okoye, L., & Nwakpa, G. (2023). Oil taxation and macroeconomic stability in Nigeria. *Journal of Development Studies*, 15(3), 65–82.
- Omodero, C. (2023). Gross fixed capital formation and productivity in West Africa. *Journal of Development Macroeconomics*, 5(1), 101–118.
- Onuoha, C. E., & Patrick, O. J. (2023). Assessing the role of petroleum profit tax in Nigeria's economic development: A structural equation modelling approach. *Journal of Contemporary Economic Development*, 11(4), 201–219.
- Ogunyemi, T. A., & Falode, O. J. (2022). Petroleum profit tax and economic growth dynamics in Nigeria: A vector error correction analysis. *African Journal of Fiscal and Monetary Research*, 7(1), 88–104.
- Oyetunde, A., & Lawal, S. (2021). Output measurement and GDP trends in Nigeria. *Journal of Contemporary Economic Analysis*, 9(1), 48–62.

- Salami, A. K., & Adegboye, M. A. (2020). Petroleum profit tax and fiscal sustainability in Nigeria: A cointegration analysis. *International Review of Public Finance and Development*, 4(1), 66–82.
- Udo, S., & Ekanem, I. (2021). Petroleum revenue flows and government income structure. *Journal of Energy Accounting and Taxation*, 2(3), 27–39.
- World Bank. (2023a). *Nigeria development update: Seizing reform opportunities*. World Bank Publications.
- World Bank. (2023b). *Nigeria economic update: Strengthening growth foundations*. World Bank Publications.
- Yusuf, M., & Usman, H. (2021). Oil revenue and macroeconomic dynamics in Nigeria. *Journal of Applied Economics and Policy Studies*, 6(4), 90–105.