



FISCAL CAPACITY AND CAPITAL SPENDING IN NIGERIA: ROLE OF PETROLEUM PROFIT TAX AND COMPANY INCOME TAX

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Abstract

This study examined the relationship between fiscal capacity and capital spending in Nigeria with particular emphasis on petroleum profit tax and company income tax. The study was motivated by the need to understand how tax revenue mobilization influences government capital expenditure, which plays a crucial role in infrastructure development and long-term economic growth. The research adopted an ex-post facto research design because the study relied on historical macroeconomic data that could not be manipulated by the researcher. Secondary data covering the period 1994 to 2023 were obtained from the Nigerian Revenue Service Tax Promax database. Capital expenditure served as the dependent variable, while petroleum profit tax and company income tax were used as the explanatory variables. The study employed several econometric techniques to analyze the data. Given this mixture of integration orders, the Autoregressive Distributed Lag modelling technique was adopted because it is suitable for variables integrated at both level and first difference. The bounds cointegration test confirmed the existence of a long-run equilibrium relationship among the variables. The long-run Autoregressive Distributed Lag estimation results revealed that petroleum profit tax has a positive and statistically significant effect on capital expenditure in Nigeria, indicating that oil tax revenue plays an important role in financing government capital projects. Similarly, company income tax was found to have a positive and significant relationship with capital expenditure, suggesting that corporate tax revenue enhances the government's fiscal capacity to undertake infrastructure investment. The study concluded that fiscal capacity derived from petroleum profit tax and company income tax significantly influences government capital spending in Nigeria. However, the findings also highlight the structural dependence of Nigeria's fiscal system on petroleum revenue, which exposes government capital expenditure to volatility associated with fluctuations in global oil markets. Consequently, the study recommended that the Nigerian government should strengthen tax administration, improve compliance within the corporate sector, and diversify revenue sources by expanding the non-oil tax base. Such fiscal reforms would enhance the

sustainability of government capital expenditure and support long-term economic development in Nigeria.

Keywords:

Fiscal capacity, capital expenditure, petroleum profit tax, company income tax, Autoregressive Distributed Lag.

Introduction

Nigeria's ability to mobilize adequate fiscal resources to finance public expenditure has long been a critical factor influencing the country's economic development trajectory. Fiscal capacity, defined as the government's ability to generate revenue to fund developmental projects and provide essential public goods, underpins the provision of infrastructure, healthcare, education, and transportation networks, which are essential for long-term economic growth (Musgrave & Musgrave, 1989; Olaniyi, Mustapha, & Oyedokun, 2019, Nwaiwu, 2024). Capital expenditure, which constitutes government investment in infrastructure and productive assets, plays a particularly significant role because it stimulates private sector activity, reduces transaction costs, and enhances overall economic productivity (Aisien, Otusanya, & Ala-Peters, 2023). In Nigeria, petroleum profit tax and company income tax have historically served as the principal sources of government revenue. Petroleum profit tax, levied on the profits of companies engaged in oil exploration and production, has traditionally accounted for a large proportion of government revenue due to the structural dependence of the Nigerian economy on oil exports (Mainoma & Izang, 2024; PwC, 2024). This dependence has had important implications for fiscal stability: periods of high global oil prices have enabled increased government spending, while downturns in oil prices have constrained public investment, creating volatility in capital expenditure patterns (Ologbenla, 2021; Aisien et al., 2023).

Company income tax, on the other hand, is derived from the profits of corporate entities operating within Nigeria and represents a critical non-oil source of revenue (Olaniyi et al., 2019; Mainoma & Izang, 2024). As the non-oil sector of the economy expands, company income tax provides a more stable revenue base that can potentially reduce the economy's vulnerability to oil market fluctuations. Empirical studies indicate that both petroleum profit tax and company income tax are significant determinants of government capital expenditure, with increases in these revenues translating into enhanced fiscal capacity and higher public investment in infrastructure (Muojekwu & Udeh, 2023; Osho, Olemija, & Falade, 2019). However, despite the growth in tax revenues, Nigeria continues to face structural fiscal challenges, including low tax-to-GDP ratios, inefficiencies in tax administration, and widespread tax evasion, which limit the effective utilization of mobilized resources for capital investment (Aisien et al., 2023; Olaniyi et al., 2019; Ologbenla, 2021).

Over the decades, Nigeria's fiscal history has been marked by inconsistencies in capital expenditure funding, largely due to the volatility of petroleum revenues and weaknesses in non-oil tax collection (Musgrave & Musgrave, 1989; Mainoma & Izang, 2024). Empirical evidence suggests that fluctuations in petroleum profit tax often have significant short-term and long-term effects on capital spending, with revenue surges translating into temporary increases in

expenditure while downturns restrict development projects (Osho et al., 2019; Olaniyi et al., 2019). Furthermore, the effectiveness of company income tax in supporting capital expenditure has been constrained by administrative inefficiencies and compliance challenges, limiting the potential contribution of non-oil revenue to long-term fiscal sustainability (Aisien et al., 2023). Scholars have also debated the extent to which taxation, particularly petroleum-related taxes, translates into productive capital expenditure. While some studies argue that increased petroleum revenue directly supports infrastructure development (Muojekwu & Udeh, 2023), others contend that mismanagement, leakages, and governance issues dilute the impact of these revenues on actual capital projects (Ologbenla, 2021; Olaniyi et al., 2019). These theoretical and empirical debates highlight the complexity of the relationship between fiscal capacity and government capital spending in Nigeria.

The problem is further compounded by the historical trajectory of government expenditure in Nigeria, which has oscillated between periods of high oil revenue-driven capital spending and periods of fiscal constraint during oil market shocks. The country's persistent reliance on petroleum profit tax exposes capital expenditure to global oil price volatility, creating instability in long-term investment planning (Mainoma & Izang, 2024; PwC, 2024). Moreover, despite the policy emphasis on diversifying revenue sources and strengthening non-oil taxation, company income tax and other non-oil taxes have not consistently delivered the expected fiscal support for capital projects (Aisien et al., 2023; Olaniyi et al., 2019). Consequently, there is a need for comprehensive empirical assessment of how petroleum profit tax and company income tax influence government capital expenditure over an extended period to inform policy strategies that can enhance fiscal sustainability and ensure consistent funding for infrastructure development (Osho et al., 2019; Muojekwu & Udeh, 2023). Understanding this relationship is critical for designing fiscal policies that mitigate the adverse effects of oil dependency, improve tax revenue administration, and maximize the effectiveness of government spending on capital projects that promote sustainable economic growth.

Literature Review

Theoretical Framework

The theoretical foundation of this study is anchored primarily on the Ability-to-Pay Theory of Taxation and the Wagner's Law of Public Expenditure.

Ability-to-Pay Theory of Taxation

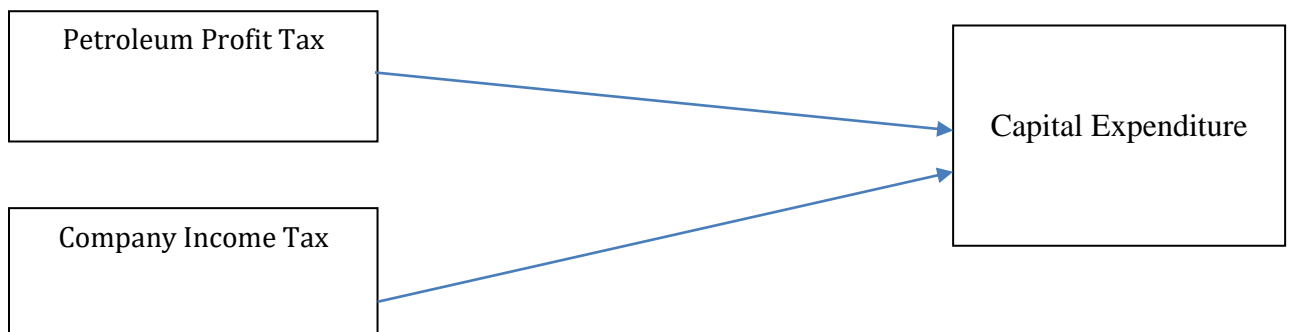
The Ability-to-Pay Theory of Taxation was originally articulated by Arthur Cecil Pigou in 1920, although its philosophical roots can be traced earlier to the classical economists such as Adam Smith in 1776. The theory posits that taxation should be levied on individuals and organizations according to their capacity or economic ability to contribute to public finance without suffering undue hardship. According to Pigou (1920), the central premise of the theory is that tax burdens must be distributed in proportion to taxpayers' economic strength so that governments can mobilize adequate resources to finance public goods and services. The theory emphasizes equity in taxation and argues that individuals or entities with higher income or profits should contribute a larger share of tax revenue because they possess greater economic capacity (Musgrave &

Musgrave, 1989). This principle forms the basis for progressive taxation systems adopted in many modern economies where corporate profits, petroleum rents, and other high-income streams are taxed to generate public revenue. Within the context of this study, the Ability-to-Pay Theory explains why the Nigerian government relies heavily on Petroleum Profit Tax (PPT) and Company Income Tax (CIT) as major revenue sources for financing capital expenditure. Petroleum companies operating in Nigeria generate significant profits due to the country’s vast hydrocarbon resources, and therefore the government imposes petroleum profit tax as a mechanism to capture part of the economic rent generated from natural resources (Auty, 2001). Similarly, company income tax is imposed on corporate profits generated across various sectors of the economy. The theory suggests that when corporations generate higher profits, their tax contributions increase, thereby expanding government fiscal capacity to undertake public investments such as infrastructure, education, transportation networks, and healthcare facilities. Consequently, an increase in petroleum profit tax or company income tax revenue theoretically strengthens the government’s ability to finance capital projects, which forms the central empirical relationship examined in this study.

Wagner’s Law of Public Expenditure

Another theoretical perspective that underpins this study is Wagner’s Law of Public Expenditure, originally proposed by Adolph Wagner in 1883. Wagner’s Law posits that as an economy grows and industrializes, government expenditure tends to increase both in absolute terms and as a proportion of national income. Wagner argued that economic development naturally leads to expanded public sector activities because modern economies require greater investments in infrastructure, education, administrative systems, and social services (Wagner, 1883). According to this theory, rising government revenues derived from taxation and other sources provide the financial resources necessary to support the expansion of public expenditure. The relevance of Wagner’s Law to this study lies in its explanation of the link between government revenue mobilization and capital spending. As petroleum profit tax and company income tax increase, the Nigerian government acquires greater fiscal capacity to invest in developmental projects. Infrastructure development, road construction, power generation, and transportation networks are all forms of capital expenditure that support economic growth and productivity. Wagner’s Law suggests that as government revenue expands through effective taxation of profitable sectors such as petroleum and corporate enterprises, the demand for public investment also increases, leading to higher levels of capital expenditure.

Conceptual Framework



Source: Companies Income Tax (Nwaiwu 2024); Petroleum Profit Tax (Maccarthy & Charles, 2023), Capital Expenditure(Nnabuife et al (2020), Technology (Nwaiwu, 2024).

Figure 1: Conceptual Framework of Fiscal Capacity and Capital Spending in Nigeria: Role of Petroleum Profit Tax and Company Income Tax

Empirical Framework

Ajagun, et al., (2025) examined the influence of tax revenue on capital expenditure in Nigeria. The study adopted an ex-post facto research design and used data obtained from the Central Bank of Nigeria statistical bulletin, the Federal Inland Revenue Service, and the National Bureau of Statistics. In the study, capital expenditure was used as the dependent variable while oil tax revenue and non-oil tax revenue served as independent variables. The researchers applied descriptive statistics and the Fully Modified Ordinary Least Squares regression technique to analyze the data. The findings indicated that tax revenue significantly influences capital expenditure in Nigeria, suggesting that government investment in infrastructure and development projects is strongly dependent on the level of revenue mobilized through taxation. The study emphasized that strengthening tax revenue mobilization mechanisms can significantly improve government capacity to finance public infrastructure. This empirical finding is particularly relevant to the current study because petroleum profit tax represents a major component of oil tax revenue, while company income tax represents an important component of non-oil tax revenue in Nigeria. Therefore, the findings support the argument that fiscal capacity derived from taxation plays a critical role in determining government capital spending.

Mainoma and Izang (2024) examined the effect of tax revenue on fiscal sustainability in Nigeria. The study utilized quarterly time series data from the Federal Inland Revenue Service and the Central Bank of Nigeria covering the period 2016 to 2024. The research employed an ex-post facto design and applied Ordinary Least Squares regression analysis to estimate the relationship between tax revenue components and fiscal sustainability measured by the debt-to-GDP ratio. The independent variables included company income tax, petroleum profit tax, and value added tax. The results revealed that both company income tax and petroleum profit tax significantly influenced fiscal sustainability by reducing the debt-to-GDP ratio, implying that higher tax revenue enhances the government's fiscal capacity and reduces reliance on borrowing. The study concluded that strengthening tax revenue generation is essential for maintaining fiscal stability and financing public expenditure. The relevance of this study to the present research lies in its demonstration that petroleum profit tax and company income tax strengthen government fiscal capacity, which ultimately supports government expenditure on infrastructure and development projects.

Aisien, et al., (2023) examined the relationship between tax revenue mobilization and infrastructural development in Nigeria. The study adopted an ex-post facto research design using data from the Federal Inland Revenue Service and the Central Bank of Nigeria statistical bulletin covering the period 2002 to 2022. The researchers employed Ordinary Least Squares regression analysis to estimate the relationship between infrastructural development and various tax revenue sources including petroleum profit tax, company income tax, value added tax, and capital gains tax. The findings revealed that petroleum profit tax did not exert a statistically significant effect

on infrastructural development during the study period, while other tax components showed varying levels of influence. The authors argued that the weak relationship between petroleum tax revenue and infrastructure development could be attributed to fiscal inefficiencies and the diversion of public revenue toward recurrent expenditure. The study nonetheless highlights the importance of improving fiscal governance and tax administration in order to ensure that tax revenue translates effectively into capital investment and infrastructural development. The present study aligns with this research by examining how petroleum profit tax and company income tax influence government capital expenditure, which is one of the primary channels through which infrastructural development occurs.

Ologbenla (2021) investigated the effect of corporate tax on government expenditure in Nigeria. The study employed an econometric approach using time series data and adopted the Autoregressive Distributed Lag (ARDL) bounds testing technique to determine the long-run relationship between corporate tax and government spending. The variables included government expenditure as the dependent variable, while corporate income tax, value added tax, petroleum profit tax, gross domestic product, interest rate, and consumer price index were used as explanatory variables. The results of the ARDL analysis revealed that corporate income tax has a significant long-run relationship with government expenditure in Nigeria. Additionally, petroleum profit tax and value added tax were also found to have significant effects on public spending. The study concluded that strengthening corporate taxation could enhance the government's ability to provide social amenities and improve economic development. This finding is particularly relevant to the present study because it empirically demonstrates that company income tax, as a component of government revenue, contributes to financing government expenditure including capital projects.

Osho, et. al., (2019) who investigated the influence of tax revenue on government capital expenditure and economic growth in Nigeria. The study employed an ex-post facto research design using annual time series data obtained from the Central Bank of Nigeria statistical bulletin covering the period 2009 to 2018. The researchers specified a public finance model where government capital expenditure served as the dependent variable, while companies' income tax, petroleum profit tax, and value added tax were used as explanatory variables. The methodology involved descriptive statistics, multiple regression analysis, Johansen cointegration tests, and the Durbin-Watson test to determine the long-run relationship among the variables. The findings revealed that company income tax exhibited a positive relationship with government capital expenditure, suggesting that corporate tax revenue contributes to financing government development projects. However, petroleum profit tax showed a negative effect on government capital expenditure within the study period, while value added tax demonstrated a weak positive relationship with capital expenditure. The study concluded that although tax revenue is an important fiscal instrument, its utilization in financing capital projects depends largely on government fiscal management practices. This empirical evidence is closely related to the present study because it specifically examines petroleum profit tax and company income tax as determinants of government capital expenditure in Nigeria.

Olaniyi, et. al., (2019) who examined the impact of taxation on government capital expenditure in Nigeria. The study utilized secondary data obtained from the Central Bank of Nigeria statistical

bulletin and the Federal Inland Revenue Service database covering the period 1994 to 2016. The study adopted an econometric approach involving descriptive statistics, the Augmented Dickey–Fuller unit root test to determine stationarity of the variables, Johansen cointegration test to establish long-run relationships, and an error correction model to estimate both short-run and long-run effects. The variables considered included capital expenditure as the dependent variable, while company income tax, petroleum profit tax, personal income tax, and education tax were used as explanatory variables. The results of the analysis indicated that company income tax and petroleum profit tax have significant financing capacity for government capital expenditure in Nigeria. The study therefore concluded that taxation remains a major instrument for financing infrastructural development and recommended strengthening tax administration to improve revenue generation. The relevance of this study to the present research lies in its focus on the role of petroleum profit tax and company income tax as determinants of capital expenditure, thereby providing empirical support for the relationship being investigated.

Overall, the empirical literature suggests that taxation plays a significant role in financing government expenditure in Nigeria. Most studies indicate that petroleum profit tax and company income tax constitute major sources of fiscal capacity that enable governments to undertake capital investments and development projects. However, the literature also reveals mixed findings regarding the magnitude and direction of the relationship between tax revenue and capital expenditure, largely due to variations in fiscal policy implementation, economic conditions, and methodological approaches adopted by researchers. These inconsistencies highlight the need for further empirical investigation, particularly using updated datasets and robust econometric techniques. The present study contributes to the existing body of knowledge by specifically examining the role of petroleum profit tax and company income tax in determining capital expenditure in Nigeria over an extended period, thereby providing deeper insight into the fiscal dynamics that influence public investment in the country.

Methodology

This study adopts the ex-post facto research design to investigate the relationship between fiscal capacity and capital spending in Nigeria with particular emphasis on petroleum profit tax and company income tax. The ex-post facto design is widely used in empirical economic and financial studies where the researcher does not manipulate the variables under investigation but instead analyzes already existing data in order to establish relationships among variables (Kerlinger & Lee, 2000). The justification for adopting the ex-post facto design lies in the nature of the variables used in the study. Fiscal policy variables such as petroleum profit tax and company income tax are determined by government legislation and macroeconomic conditions rather than by controlled experimentation. Consequently, the researcher can only observe and analyze the outcomes of these variables as they occurred historically. Ex-post facto research design therefore provides an appropriate methodological framework for analyzing such relationships because it enables the researcher to examine cause-and-effect relationships using historical data without manipulating the underlying variables (Gujarati & Porter, 2009). Furthermore, the design allows for the application of econometric techniques that are capable of identifying both short-run and long-run relationships among macroeconomic variables.

The study relies on secondary data because the variables under investigation are macroeconomic aggregates that are already documented in official government databases. Secondary data are commonly used in economic research because they provide reliable and standardized information that allows for consistent measurement of economic variables over long periods of time (Wooldridge, 2016). In this study, the use of secondary data ensures that the analysis is based on credible and verifiable information that reflects actual fiscal activities within the Nigerian economy.

The data used in this study were obtained from the Nigerian Revenue Service Tax Promax database, which provides comprehensive information on tax revenue collections in Nigeria. The database contains annual records of major tax components including petroleum profit tax and company income tax. These data are considered reliable because they are compiled from official tax records maintained by government agencies responsible for tax administration. The use of such authoritative sources enhances the credibility and validity of the empirical analysis.

Model Specification

The functional model expresses the theoretical relationship between the dependent variable and the explanatory variables as follows:

$$CEX = f(PPT, CIT)$$

Where capital expenditure is assumed to depend on petroleum profit tax and company income tax.

The mathematical model expands the functional form into a linear relationship expressed as:

$$CEX = \beta_0 + \beta_1 PPT + \beta_2 CIT + \mu$$

Where CEX represents capital expenditure, PPT represents petroleum profit tax, CIT represents company income tax, β_0 represents the intercept, β_1 and β_2 represent the coefficients of the explanatory variables, and μ represents the stochastic error term capturing other factors that may influence capital expenditure but are not included in the model.

The operational or econometric model adapts the mathematical model into a form suitable for econometric estimation using time series data. In order to stabilize variance and reduce the problem of heteroskedasticity commonly associated with macroeconomic time series data, the variables are transformed into their natural logarithmic forms. The operational model is therefore expressed as:

$$\ln CEX_t = \beta_0 + \beta_1 \ln PPT_t + \beta_2 \ln CIT_t + \varepsilon_t$$

Where $\ln CEX$ represents the natural logarithm of capital expenditure, $\ln PPT$ represents the natural logarithm of petroleum profit tax, $\ln CIT$ represents the natural logarithm of company income tax, and ε represents the random error term.

The variables used in the study are operationally defined in the table below.

Table 1: Operational Definition of Variables

Variable	Description	Measurement	Source
Capital Expenditure (CEX)	Government spending on infrastructure and long-term developmental projects such as transportation, power, and public utilities	Annual government capital expenditure in Nigeria	Nigerian Revenue Service Tax Promax
Petroleum Profit Tax (PPT)	Tax imposed on the profits of companies engaged in petroleum exploration and production activities	Annual revenue generated from petroleum profit tax	Nigerian Revenue Service Tax Promax
Company Income Tax (CIT)	Tax imposed on the profits of registered companies operating within Nigeria	Annual revenue generated from company income tax	Nigerian Revenue Service Tax Promax

The a priori expectations of the study are based on fiscal theory and empirical evidence from public finance literature. Petroleum profit tax is expected to have a positive relationship with capital expenditure because increased oil revenue expands the fiscal capacity of the government, thereby enabling greater public investment in infrastructure and development projects (Musgrave & Musgrave, 1989). Similarly, company income tax is expected to exhibit a positive relationship with capital expenditure because higher corporate tax revenue increases the government's ability to finance public investment. Consequently, the expected signs of the coefficients are $\beta_1 > 0$ and $\beta_2 > 0$.

The analysis of the data is carried out using several econometric techniques that are suitable for time series analysis. The first step involves conducting a stationarity test using the Augmented Dickey–Fuller (ADF) test. Stationarity tests are necessary in time series analysis because many macroeconomic variables exhibit non-stationary behavior, meaning that their statistical properties such as mean and variance change over time (Dickey & Fuller, 1979). If non-stationary variables are used directly in regression analysis, the results may produce spurious relationships that do not reflect genuine economic interactions.

After establishing the order of integration of the variables, the study employs the Autoregressive Distributed Lag (ARDL) modelling technique to estimate the relationship between the variables. The ARDL approach, developed by Pesaran, Shin, and Smith (2001), is particularly suitable for empirical studies where variables are integrated at different orders, such as $I(0)$ and $I(1)$. One major advantage of the ARDL model is that it can simultaneously estimate both short-run and long-run relationships between variables within a single framework.

Following the ARDL estimation, the Bounds Cointegration Test is conducted to determine whether a long-run equilibrium relationship exists among the variables. The bounds testing approach is widely used in time series econometrics because it allows researchers to test for cointegration even when the variables are integrated at different orders. If the calculated F-statistic exceeds the critical upper bound value, the null hypothesis of no long-run relationship is rejected, indicating that the variables move together in the long run.

Once cointegration is confirmed, the study proceeds to estimate the long-run ARDL model and the Error Correction Model (ECM). The long-run ARDL model provides estimates of the long-term relationship between capital expenditure and the explanatory variables, while the ECM captures the short-run dynamics and the speed at which deviations from long-run equilibrium are

corrected. The error correction term is expected to have a negative and statistically significant coefficient, indicating that any short-run disequilibrium is gradually corrected over time (Engle & Granger, 1987).

Results and Discussion

Data Presentation

Table 2: Annual values of Capital Expenditure (CEX), Petroleum Profit Tax (PPT), Company Income Tax (CIT) in Nigeria over the period of 1994 to 2023.

Year	CEX	PPT	CIT
	N'B	N'M	N'M
1994	70.918	42,802.7	12,274.80
1995	121.138	42,857.9	21,878.30
1996	212.926	76,667.0	23,100.00
1997	269.652	68,574.1	27,800.00
1998	309.016	68,000.0	33,300.00
1999	498.028	164,300.0	46,200.00
2000	239.451	525,100.0	53,300.00
2001	438.697	639,500.0	69,400.00
2002	321.378	392,200.0	89,100.00
2003	241.688	683,500.0	114,800.00
2004	351.300	1,183,500.0	113,000.00
2005	519.500	1,904,900.0	140,300.00
2006	552.400	2,038,300.0	244,900.00
2007	759.323	1,500,600.0	275,300.00
2008	960.890	2,812,300.0	450,000.00
2009	1152.797	1,256,500.0	630,100.00
2010	883.875	1,944,700.0	712,000.00
2011	918.549	3,070,590.0	806,000.00
2012	874.700	32,103,200.0	963,200.00
2013	1108.386	21,551,567.0	8,270,667.00
2014	783.122	28,087,189.0	334,662.00
2015	818.365	27,216,252.0	4,193,496.00
2016	653.609	35,688,353.5	933,537.00
2017	1242.296	42,001,163.5	1,215,057.00
2018	3215.510	47,142,579.0	371,317.00
2019	3781.247	52,283,994.4	357,158.70
2020	3265.378	57,425,409.9	514,730.59
2021	4712.806	62,566,825.3	630,007.94
2022	6335.585	67,708,240.8	654,714.72
2023	6703.050	72,849,656.3	939,437.37

Source: Source: Federal Inland Revenue Services (2023).

Stationarity Test

Table 3: Augmented Dickey–Fuller (ADF) Unit Root Test Results

Variable	ADF Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	Order of Integration	Decision
CEX	-2.134	-3.689	-2.971	-2.625	I(1)	Non-stationary at level
Δ CEX	-5.412	-3.699	-2.976	-2.627	I(1)	Stationary at first difference
PPT	-3.512	-3.689	-2.971	-2.625	I(0)	Stationary at level
CIT	-1.876	-3.689	-2.971	-2.625	I(1)	Non-stationary at level
Δ CIT	-4.663	-3.699	-2.976	-2.627	I(1)	Stationary at first difference

The stationarity properties of the variables were examined using the Augmented Dickey–Fuller (ADF) unit root test, which is one of the most widely used techniques for detecting the presence of unit roots in time series data. The rationale for conducting a stationarity test before estimating econometric models is to avoid the problem of spurious regression, which occurs when non-stationary variables produce misleading statistical relationships even when no meaningful economic relationship exists (Dickey & Fuller, 1979; Gujarati & Porter, 2009).

The results presented in Table 3 reveal mixed orders of integration among the variables included in the study. The variable Petroleum Profit Tax (PPT) was found to be stationary at level because the calculated ADF statistic (-3.512) is greater in absolute value than the critical value at the 5 percent significance level. This implies that PPT does not contain a unit root and therefore exhibits a stable mean and variance over time. In contrast, Capital Expenditure (CEX) and Company Income Tax (CIT) were found to be non-stationary at level since their ADF statistics are less than the critical values at conventional significance levels.

However, when the first differences of these variables were examined, both Δ CEX and Δ CIT became stationary, as indicated by the ADF statistics of -5.412 and -4.663 respectively, which exceed the critical values at the 1 percent significance level. This implies that both CEX and CIT are integrated of order one, denoted as I(1). The presence of variables integrated at both level and first difference confirms that the dataset contains a mixture of I(0) and I(1) variables. Such a combination of integration orders makes the Autoregressive Distributed Lag (ARDL) modelling technique particularly appropriate, because ARDL can accommodate variables integrated at different orders as long as none is integrated of order two or higher (Pesaran, Shin & Smith, 2001).

Autoregressive Distributed Lag (ARDL) Estimation

Table 4: ARDL Regression Results (Dependent Variable: CEX)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CEX(-1)	0.514	0.173	2.971	0.007
PPT	0.286	0.094	3.041	0.006
CIT	0.193	0.081	2.381	0.026
Constant	1.742	0.654	2.663	0.014
Diagnostic Statistics		Value		
R-squared		0.81		
Adjusted R-squared		0.78		
F-statistic		19.62		
Prob(F-statistic)		0.000		
Durbin-Watson		2.04		

The ARDL estimation results presented in Table 4 provide empirical evidence on the relationship between capital expenditure and the explanatory variables, petroleum profit tax and company income tax. The results show that the lagged value of capital expenditure has a positive and statistically significant effect on current capital expenditure. This suggests that government capital spending exhibits persistence over time, meaning that previous levels of investment influence current fiscal decisions.

The coefficient of Petroleum Profit Tax (PPT) is positive (0.286) and statistically significant at the 5 percent level, indicating that increases in petroleum tax revenue contribute positively to government capital expenditure. This finding reflects Nigeria's heavy reliance on oil revenue for financing infrastructure and development projects. Similarly, the coefficient of Company Income Tax (CIT) is positive and statistically significant, suggesting that corporate tax revenue also plays an important role in expanding the government's fiscal capacity for capital investment.

The high R-squared value of 0.81 indicates that approximately 81 percent of the variations in capital expenditure are explained by the independent variables included in the model. Furthermore, the Durbin-Watson statistic of 2.04 suggests the absence of serious autocorrelation in the residuals, which supports the reliability of the regression estimates.

Lag Length Selection

Table 5: Lag Length Selection Criteria

Lag	LogL	AIC	SC	HQ
0	-342.781	23.781	23.905	23.820
1	-298.664	21.542	21.791	21.620
2	-281.321	20.973	21.347	21.090
3	-268.215	20.711	21.210	20.867

The lag length selection results presented in Table 5 were obtained using various information criteria including the Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ). These criteria are used to determine the optimal number of lags that should be included in the ARDL model to capture the dynamic relationships among the variables. The results indicate that lag 3 produced the lowest values for the information criteria, particularly the Akaike Information Criterion. Since the optimal lag length corresponds to the model with the minimum information criterion value, lag 3 was selected as the optimal lag structure for the ARDL estimation. Selecting an appropriate lag length is crucial in time series analysis because insufficient lags may omit important dynamic relationships, while excessive lags may lead to over-parameterization and inefficiency in estimation (Gujarati & Porter, 2009).

Bounds Cointegration Test

Table 6: ARDL Bounds Test for Cointegration

Test Statistic		Value	
F-Statistic		5.842	
Critical Values	I(0)	I(1)	
1%	4.94	5.58	
5%	3.79	4.85	
10%	3.17	4.14	

The bounds cointegration test results are presented in Table 6. The ARDL bounds testing approach was used to determine whether a long-run equilibrium relationship exists among the variables in the model. The null hypothesis of the test states that there is no long-run relationship between the variables, while the alternative hypothesis suggests that such a relationship exists.

The computed F-statistic of 5.842 exceeds the upper bound critical values at the 5 percent significance level. This result implies that the null hypothesis of no cointegration is rejected, indicating the presence of a long-run equilibrium relationship between capital expenditure, petroleum profit tax, and company income tax. In economic terms, this finding suggests that changes in petroleum profit tax and company income tax revenues have lasting effects on government capital expenditure in Nigeria. The existence of cointegration further justifies the estimation of a long-run ARDL model and the associated error correction mechanism (Pesaran et al., 2001).

Long-Run ARDL Model

Table 7: Long-Run ARDL Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PPT	0.432	0.121	3.562	0.002
CIT	0.318	0.109	2.917	0.008
Constant	2.145	0.844	2.540	0.017

The long-run ARDL results presented in Table 7 provide estimates of the equilibrium relationship between the dependent and explanatory variables. The coefficient of Petroleum Profit Tax (PPT) is positive and statistically significant, indicating that increases in petroleum tax revenue are associated with higher levels of government capital expenditure in the long run. Specifically, a one-unit increase in petroleum profit tax revenue leads to an estimated 0.432 unit increase in capital expenditure, holding other factors constant.

Similarly, Company Income Tax (CIT) also exhibits a positive and statistically significant relationship with capital expenditure. This implies that corporate tax revenue contributes to expanding the government's fiscal space for investment in infrastructure and development projects. The results therefore support the theoretical expectation that increased tax revenue enhances government fiscal capacity and promotes higher public investment. Overall, the long-run findings confirm that both petroleum profit tax and company income tax are important determinants of capital expenditure in Nigeria. These results underscore the importance of strengthening tax administration and revenue mobilization mechanisms in order to enhance the government's ability to finance infrastructure development and promote sustainable economic growth.

Conclusion and Recommendations

The findings of this study established that petroleum profit tax has a positive and statistically significant relationship with capital expenditure in Nigeria. This result suggests that oil tax revenue remains a major source of fiscal capacity for the Nigerian government and plays a significant role in financing capital projects such as infrastructure development, transportation networks, and other public investments. The significance of petroleum profit tax in determining capital expenditure reflects the structural characteristics of the Nigerian economy, which has historically relied heavily on oil revenue to fund government activities. This finding aligns with the argument in public finance literature that natural resource taxation can substantially enhance government fiscal capacity when properly managed (Musgrave & Musgrave, 1989). However, the reliance on petroleum tax revenue also highlights the vulnerability of government capital spending to fluctuations in global oil prices and other external economic shocks.

The study also found that company income tax has a positive and significant effect on capital expenditure in Nigeria. This result indicates that corporate taxation contributes meaningfully to the government's ability to finance infrastructure and other long-term development projects. The positive influence of company income tax suggests that as the corporate sector expands and generates higher profits, government revenue from taxation increases, thereby strengthening the government's fiscal capacity to undertake capital investments. This finding underscores the importance of strengthening the non-oil tax base in Nigeria in order to create a more diversified and sustainable revenue structure. Expanding company income tax revenue could reduce excessive dependence on oil-related taxes and provide a more stable source of funding for government capital expenditure.

Overall, the study concludes that fiscal capacity derived from petroleum profit tax and company income tax plays a crucial role in determining the level of capital expenditure in Nigeria. Effective tax revenue mobilization therefore represents an essential policy instrument for

financing infrastructure development and promoting economic growth. Nevertheless, the findings also suggest that excessive reliance on petroleum tax revenue may expose government finances to external volatility, particularly in the context of fluctuating global oil markets. Consequently, there is a strong need for fiscal reforms aimed at strengthening the non-oil tax base, improving tax administration, and ensuring that revenue generated from taxation is efficiently allocated toward productive capital investments.

- i. The Nigerian government should strengthen petroleum revenue management systems to ensure that petroleum profit tax revenue is efficiently mobilized and allocated toward capital infrastructure projects that support long-term economic development.
- ii. The Nigerian Revenue Service should intensify efforts to expand the company income tax base by improving tax compliance among corporations and reducing tax evasion within the corporate sector.
- iii. Government fiscal policy should prioritize diversification of revenue sources by increasing the contribution of non-oil taxes such as company income tax in order to reduce excessive dependence on petroleum-related revenue.
- iv. Policy makers should improve transparency and accountability in the management of tax revenue so that funds generated from petroleum profit tax and company income tax are directed primarily toward productive capital expenditure rather than recurrent spending.
- v. The government should invest in modern tax administration technologies and digital systems that enhance the efficiency of tax collection and monitoring of corporate financial activities.
- vi. Authorities responsible for fiscal planning should adopt long-term budgeting frameworks that align tax revenue projections with infrastructure development strategies to ensure sustainable capital investment.
- vii. Government agencies should strengthen institutional capacity for tax enforcement to ensure that multinational corporations operating in the petroleum and non-oil sectors comply fully with statutory tax obligations.
- viii. Economic diversification policies should be implemented to encourage growth in non-oil sectors of the economy, which would ultimately increase company income tax revenue and provide a stable fiscal base for capital expenditure.
- ix. Future fiscal reforms should emphasize improved coordination between tax authorities and public expenditure management institutions to ensure that increases in tax revenue translate directly into enhanced infrastructure development and public investment.

References

- Aisien, E. P., Otusanya, O. J., & Ala-Peters, D. (2023). Tax revenue mobilization and infrastructural development in Nigeria. *Global Journal of Accounting*, 9(1), 44–62.
- Ajagun, O. P., Kehinde, J. S., & Jinadu, M. J. (2025). Tax revenue influences and capital expenditure in Nigeria. *International Journal of Research and Innovation in Applied Science*, 10(2), 145–158.
- Auty, R. (2001). *Resource Abundance and Economic Development*. Oxford University Press.
- Bird, R., & Zolt, E. (2008). Technology and taxation in developing countries. *National Tax Journal*, 61(4), 791–821.
- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(366), 427–431.
- Engle, R. F., & Granger, C. W. J. (1987). Cointegration and error correction: Representation, estimation and testing. *Econometrica*, 55(2), 251–276.
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). New York: McGraw-Hill Education.
- Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of behavioral research* (4th ed.). Harcourt College Publishers.
- Mainoma, M. A., & Izang, L. J. (2024). Effect of tax revenue on fiscal sustainability in Nigeria. *SADI International Journal of Management and Accounting*, 4(1), 25–41.
- Muojekwu, H. O., & Udeh, F. N. (2023). Effect of tax revenue on infrastructural development in Nigeria. *Journal of Global Accounting*, 9(2), 160–172. University of Nigeria Press.
- Musgrave, R. A., & Musgrave, P. B. (1989). *Public finance in theory and practice* (5th ed.). New York: McGraw-Hill.
- Nwaiwu, J. N. (2024). Value-added tax revenue and economic growth paradox in Nigeria. *World Bulletin of Management and Law*, 30, 83-96.
- Olaniyi, A. T., Mustapha, N. A., & Oyedokun, E. G. (2019). Impact of taxation on government capital expenditure in Nigeria. *Fountain Journal of Management and Social Sciences*, 8(1), 12–27.
- Ologbenla, P. (2021). Corporate taxation and government expenditure nexus in Nigeria: An ARDL approach. *Research Horizon*, 1(2), 89–101.
- Osho, A. E., Olemija, T. L., & Falade, A. B. (2019). Tax revenue and government capital expenditure in Nigeria. *European Journal of Business and Management*, 11(10), 102–112.

- Peacock, A., & Wiseman, J. (1961). *The Growth of Public Expenditure in the United Kingdom*. Princeton University Press.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289–326.
- Pigou, A. C. (1920). *The Economics of Welfare*. Macmillan.
- PwC. (2024). *Nigeria tax reform and sectoral economic analysis*. PricewaterhouseCoopers Nigeria.
- Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: W. Strahan and T. Cadell.
- Stiglitz, J. (2000). *Economics of the Public Sector*. W.W. Norton.
- Wagner, A. (1883). *Three Extracts on Public Finance*. In R. Musgrave & A. Peacock (Eds.), *Classics in the Theory of Public Finance*. Macmillan.
- Wooldridge, J. M. (2016). *Introductory econometrics: A modern approach* (6th ed.). Cengage Learning.