# Effect of Tax Reforms on Revenue Generation in Nigeria

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## Abstract

Nigeria has implemented several tax reforms to increase revenue and reduce its reliance on oil. These reforms seek to broaden the tax base by including more individuals and businesses. The main objective is to examine the effects of tax reforms on revenue generation in Nigeria. This study employs an ex-post facto research design to analyze the factors influencing specific outcomes by examining past events and existing conditions, with no manipulation of the data. Focusing on the Nigerian economy, it uses time series data spanning 43 years (1980-2023) to assess the effects of tax reforms. Data was sourced from the Central Bank of Nigeria Statistical Bulletin and National Bureau of Statistics. The findings reveal the study highlights the significant impact of tax reforms on revenue generation in Nigeria, noting that higher tax rates initially increase revenue but may lead to longterm declines due to complex underlying factors. This inverse relationship reveals that the connection between tax reforms and revenue generation is not a straightforward one. The study recommends tax reforms such as reducing the Companies Income Tax (CIT) rate from 30% to 20% to boost revenue and reduce Nigeria's dependence on oil price volatility. Full autonomy for the Federal Inland Revenue Service (FIRS), tackling multiple taxation, and promoting transparency are key to restoring taxpayer confidence. For Petroleum Profits Tax (PPT), addressing corruption and inefficiencies will enhance its contribution to national revenue. Increasing the VAT rate on luxury goods to 10% and improving VAT administration through better billing practices, record-keeping, and training are also suggested to improve tax efficiency and revenue collection.

Keywords: Tax Reforms, Revenue Generation, Nigerian Economy, development

### **1. INTRODUCTION**

Taxation is crucial for economic development, providing government revenue to fund public goods, services, and infrastructure (Bird & Zolt, 2023). In developing countries like Nigeria, taxation offers a sustainable revenue source less vulnerable to external shocks, such as fluctuations in global oil prices. This is particularly important for Nigeria, whose economy has long depended on oil exports, making it susceptible to instability (Ajala, 2018).

Nigeria has implemented several tax reforms to increase revenue and reduce its reliance on oil. These reforms seek to broaden the tax base by including more individuals and businesses. Despite these efforts, challenges such as tax evasion, weak administration, and the exclusion of the informal sector persist (Okafor, 2022). Notable reforms include adding Value Added Tax (VAT) in 1993, designed to provide steady revenue by taxing consumption. The creation of the Federal Inland Revenue Service (FIRS) aimed to improve tax administration by granting the agency more independence and resources (FIRS, 2019).

Further reforms include the introduction of the Tax Identification Number (TIN) system, corporate tax amendments, and the adoption of digital technologies like the Integrated Tax Administration System (ITAS) to streamline tax processes (Okojie 2021). However, these reforms have yielded mixed results. VAT reforms have faced resistance due to concerns about their regressive

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impact, while the FIRS continues to face issues such as corruption and difficulty in taxing the informal sector (Ogbonnia 2021)

Value-added tax (VAT) reforms in Nigeria have faced several challenges that impact revenue generation. Despite being a significant source of government revenue, issues such as low compliance rates, resistance from stakeholders due to perceived repressiveness, and the complexities in administration hinder effective implementation. Studies have shown that the informal sector's large presence exacerbates these problems, as many businesses are not registered for VAT, reducing the overall tax base (Appah, 2021).

Company Income Tax (CIT) reforms also encounter obstacles. High compliance costs and complex regulations often discourage businesses from fulfilling their tax obligations. The tax system's perceived unfairness can lead to widespread tax avoidance and evasion. Recent research indicates that while reforms have aimed to broaden the tax base and enhance compliance, the lack of transparency and accountability in tax administration remains a significant barrier (Okafor, 2023).

Petroleum Profit Tax (PPT) reforms present unique challenges as well. The heavy reliance on oil revenues makes the Nigerian economy vulnerable to fluctuations in global oil prices. Moreover, the PPT framework is often criticized for its complexity and the potential for corruption in revenue collection. Studies have highlighted that while the PPT is crucial for government revenue, the effectiveness of its reforms is undermined by issues related to governance, regulatory enforcement, and accountability (Dauda, 2019). This study examines the effects of tax reforms on revenue generation in Nigeria, specifically the study is to

- i. examine the effect of Value-Added Tax (VAT) reforms on revenue generation in Nigeria,
- ii. evaluate the impact of Company Income Tax (CIT) reforms on revenue generation in Nigeria, and
- iii. determine the effect of Petroleum Profit Tax (PPT) reforms on revenue generation in Nigeria.

While the following Null hypotheses were formulated for testing.

- **H**<sub>01</sub>: Value-added tax (VAT) reforms do not have a positive and significant effect on revenue generation in Nigeria,
- **H**<sub>02</sub>: Company Income Tax (CIT) reforms do not have a positive and significant effect on revenue generation in Nigeria and
- **H**<sub>03</sub>: Petroleum Profit Tax (PPT) reforms do not have a positive and significant effect on revenue generation in Nigeria.

# 2 Literature Review

## **Revenue Generation in Nigeria**

Musa *et al.* (2022) define revenue generation as the periodic or annual collection of taxes and other income sources that a nation, state, or public sector gathers for public use. Dorcas (2022) describes revenue as the funds required by the government to carry out its functions, sourced from taxes, penalties, fees, borrowings, and more. Similarly, Friday (2021) views revenue as including all tolls, taxes, fees, fines, and other government receipts generated over a specific period. Joy (2022) emphasizes revenue generation as the process through which the government raises funds to fulfill its responsibilities.

According to Muhammed *et al.* (2022), government revenue comes from various sources, including taxes on individuals and corporations, goods and services, exports, imports, and non-tax sources such as government-owned enterprises and central bank income. In Nigeria, revenue is categorized as oil and non-oil revenue, with oil being the primary source, contributing over 80% of the government's income (Karimu, 2019). However, the decline in oil prices due to the global health

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crisis has negatively impacted Nigeria's revenue base, prompting greater reliance on tax revenue (Adebayo *et al.*, 2022).

### **Tax Reforms**

Ocheni, (2020) defines tax reform as the process of modifying how taxes are collected and managed by the government, to improve the tax system by introducing new rates, legal provisions, and assessment methods. These reforms aim to modernize taxes, reduce complexity, and enhance transparency (Odusola, 2019). Additionally, tax reforms seek to lessen the tax burden on individuals, make the system more progressive, and simplify it to increase accountability and clarity. The decline in Nigeria's oil revenue has been a major catalyst for tax reform efforts. Key reform objectives have been to lower tax rates, broaden the tax base, and align the tax structure with global standards. According to Gimba (2019), reforms also aim to reduce the overall tax burden, make the system more equitable, and simplify its administration.

In Nigeria, notable reforms include the National Tax Policy (NTP) of 2012 and 2017, the Voluntary Assets and Income Declaration Scheme (VAIDS) in 2017, and the use of modern technologies. The NTP outlines the rules, principles, and procedures that govern Nigeria's tax system, aiming to promote economic development and improve tax administration (Awe, 2018). It addresses key challenges like low tax-to-GDP ratios, a fragmented taxpayer database, and weak information exchange systems (Richards, 2019). VAIDS, introduced in 2017 by Acting President Yemi Osinbajo, encourages the voluntary disclosure of previously undisclosed assets and income to regularize tax liabilities. The program provides a limited-time opportunity for taxpayers to correct their tax status by making full and accurate declarations of their assets and income.

## Value Added Tax

Value Added Tax (VAT) is a consumption tax applied at each stage of production or distribution, introduced in Nigeria in 1993 to provide stable government revenue. Businesses collect VAT from consumers and remit it to the government, with certain essential items like food, medical supplies, and educational materials exempt to ease the burden on low-income groups. VAT is a significant revenue source for both federal and state governments, with revenues distributed based on factors like origin, consumption, and equality among states. Although VAT reforms have aimed to expand the tax base and simplify collection, challenges remain, particularly regarding its regressive impact on low-income consumers

The introduction of Value-Added Tax (VAT) through the VAT Act No. 102 of 1993 marked a significant milestone in Nigeria's tax reform, with implementation beginning in January 1994. Since its inception, 15 out of the 42 sections of the Act have been amended. Initially, VAT was imposed on 17 categories of goods and 24 categories of services. However, certain items such as basic foods, medical and pharmaceutical products, books, newspapers, magazines, house rent, commercial vehicles, spare parts, and services from community and people's banks were exempt from VAT. Originally, the revenue was meant to be distributed 20% to the federal government and 80% to state governments, but it was eventually divided 155035 between the federal, state, and local governments (Frank, 2020). The state's allocation was further divided with 30% based on state of origin, 30% on consumption/destination, and 40% distributed equally among the states (Musa, 2021).

### **Company Income Tax**

Company Income Tax (CIT) is a direct tax levied on the profits of corporations and limited liability companies in Nigeria, as established by the Companies Income Tax Act. It applies to both resident and non-resident companies operating within the country. CIT is calculated on net profit after allowable expenses are deducted, with rates varying based on the type of company. The Federal

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Inland Revenue Service (FIRS) oversees the assessment and collection of CIT, ensuring adherence to tax laws. Notably, CIT is non-transferable, meaning the tax burden cannot be shifted to consumers. While CIT serves as an essential revenue source for the government, businesses encounter challenges, including high compliance costs, complex regulations, and the necessity for precise accounting. Reforms aimed at streamlining the CIT framework seek to improve compliance, reduce tax evasion, and create a more favorable business environment (FIRS, 2019).

Section 93 (1) of the Companies Income Tax Act CAP 60 Laws of the Federation of Nigeria 1990 defines a company as any corporation, except a corporation sole, established under any law in Nigeria or elsewhere. In Nigeria, the Corporate Affairs Commission (CAC) is responsible for registering limited liability companies, which must include "Limited (Ltd)" or "Public Company (Plc)" in their names. Companies Income Tax is a type of direct tax, meaning that both the payment and burden of the tax are borne by the company itself and cannot be passed on to others. The Federal Inland Revenue Service (FIRS), under the oversight of the Federal Board of Inland Revenue (FBIR), is responsible for assessing and collecting Companies Income Tax.

### **Petroleum Profit Tax**

Petroleum Profit Tax (PPT) is a tax imposed on the profits of companies engaged in petroleum operations in Nigeria. Established under the Petroleum Profit Tax Act, it applies to businesses involved in the extraction and transportation of petroleum resources. The tax is calculated on the net profits of these companies, typically assessed annually, (Atabor, 2019). PPT is particularly significant in Nigeria, as it is a major source of government revenue, contributing substantially to foreign exchange earnings and overall fiscal income. The tax covers various aspects of oil-related operations, including rents, royalties, and profit-sharing arrangements.

The history of PPT in Nigeria dates back to 1959, with the initial legislation aimed at ensuring the government receives a fair share of revenue from oil operations. The current framework has undergone reforms to address challenges such as compliance issues and to enhance revenue generation. Overall, PPT plays a critical role in Nigeria's economy, given the country's heavy reliance on oil production (Dauda, 2019)

According to Alimo (2021), the petroleum profit tax is imposed on earnings from petroleum operations, specifically targeting companies involved in such activities in Nigeria. The Petroleum Profits Tax Act of 1990 mandates that all companies engaged in the extraction and transportation of petroleum pay this tax (Monday, 2019). The tax is assessed and payable on the profits earned by these companies during their accounting period, typically spanning one year (January to December) (Olobo, 2013). This tax primarily applies to the upstream oil industry, focusing on elements like oil rents, royalties, margins, and profit-sharing.

Dauda (2019) notes that a petroleum company's taxable income encompasses proceeds from oil sales, related substances utilized in its refineries, and other income from its petroleum operations. This tax is crucial for Nigeria's revenue, contributing 95% of foreign exchange earnings and 70% of government revenue (Ahem, 2020). The taxation of petroleum profits in Nigeria dates back to 1959 with the enactment of the Petroleum Profit Tax Act, which was designed to take effect retroactively from January 1, 1958. This Act laid the groundwork for the current Petroleum Profit Tax Act of 2004

#### **Empirical Review**

An empirical review provides a solid foundation by summarizing existing research and highlighting key findings. This context helps to establish the relevance and significance of the current study. Ali (2023) study lies in its specific focus on the impact of Company Income Tax (CIT) reforms on internally generated revenue in Nigeria, using data from the Central Bank's Statistical Bulletin and employing regression analysis. While it establishes a significant relationship between CIT and

internally generated revenue, it does not comprehensively address the broader effects of various tax reforms on overall revenue generation in Nigeria. In contrast, existing studies on tax reforms may examine multiple types of taxes and their collective impact on revenue, without isolating CIT. Therefore, the paper highlights a specific dimension of tax reform effectiveness, suggesting a need for further investigation into how different tax reforms—beyond just CIT—affect total revenue generation and economic stability in Nigeria. This indicates a potential area for future research that could integrate various tax types and their combined effects on the country's fiscal landscape.

Appah (2023) investigated the effect of electronic taxation on revenue generation. The study used a survey method, with questionnaires distributed to residents of selected Nigerian states, and the data collected was analyzed using simple percentages and presented in tables. According to the findings of the study, electronic taxation will increase revenue generation in the states studied, as will proper record-keeping of a large database of citizens. Citizens' computer literacy will also improve electronic tax administration and significantly reduce tax evasion and avoidance, as well as operational compliance costs. The study concluded that e-government is an essential component in achieving the goal of taxation. The gap in Appah's (2023) study lies in its narrow focus on electronic taxation and its specific effects on revenue generation in selected Nigerian states. While the research provides valuable insights into how electronic taxation, improved record-keeping, and citizens' computer literacy can enhance revenue collection and reduce tax evasion, it does not explore the broader context of tax reforms as a whole and their overall impact on revenue generation in Nigeria. Unlike studies that assess various tax reforms collectively, Okafor's investigation is limited to the electronic aspect of taxation. This specificity may overlook other critical factors influencing revenue generation, such as changes in tax rates, compliance measures, and the role of different tax types. Therefore, there is a need for further research that integrates electronic taxation with other tax reform initiatives to provide a more comprehensive understanding of how these reforms collectively affect Nigeria's overall revenue generation and economic health. This could help policymakers identify synergistic effects and more effective strategies for improving the tax system.

A study on the impact of tax reforms on federal revenue generation in Nigeria was conducted by Moses, (2022). The analysis conducted using Johansen integration revealed that in Nigeria, there is a long-run relationship between tax reform and federally collected revenue. The findings revealed that by reducing tax avoidance and evasion, improving the tax system, and lowering the tax burden, the government's ability to generate more revenue through taxation may have improved. It was determined that tax reforms have the potential to increase revenue generation. The gap in the study lies in its focus on the long-run relationship between tax reforms and federally collected revenue, primarily through the lens of Johansen's integration analysis. While the study establishes that tax reforms can enhance revenue generation by addressing tax avoidance, evasion, and system improvements, it does not delve into the specific mechanisms or contextual factors that drive these changes. Additionally, the research does not differentiate between the effects of various types of tax reforms, such as those targeting Company Income Tax, Value Added Tax, or Petroleum Profit Tax. This lack of specificity may obscure the unique contributions of different tax reforms to overall revenue generation. Furthermore, the study primarily emphasizes federal revenue without exploring how these reforms may impact state and local government revenues. Therefore, future research could benefit from a more granular analysis of specific tax reforms and their diverse effects on different levels of government revenue. This would provide a comprehensive understanding of the mechanisms at play and help identify which reforms are most effective in improving overall revenue generation in Nigeria

Obadan, (2022) investigated the impact of tax reforms on revenue generation in the state of Lagos. The ordinary least square (OLS) regression technique was used to analyze secondary data collected from the Lagos State Internal Revenue Service (LIRS) in the form of taxpayer statistics and

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revenue status reports using Time Series quarterly data between 1999 and 2021. The findings revealed a long-term relationship between tax reforms and revenue generation in Lagos State. The findings also revealed that the state relied more on tax reforms than on other sources of revenue generation. As a result, it was decided that the states should work out ways to increase revenue from other sources. The gap lies in its localized focus on Lagos State, which may limit the generalizability of the findings to the broader context of Nigeria. While the study effectively demonstrates a long-term relationship between tax reforms and revenue generation specifically in Lagos, it does not explore how these findings relate to other states or the national revenue landscape. Additionally, the study relies on data from a single state, which may not account for regional differences in economic activity, tax administration, or compliance levels across Nigeria. Furthermore, while the research highlights the state's heavy reliance on tax reforms, it does not investigate the potential impact of other revenue sources, such as grants, natural resource revenues, or federal allocations, which could provide a more comprehensive understanding of overall revenue generation.

From 1981 to 2021, Ogbonna (2022) investigated the relationship between tax reforms and investment in Nigeria. However, the study used the Ordinary Least Square data analysis technique, even though it used time series data. Value-added tax, Companies Income Tax, and customs and excise duties proxied tax reforms, while gross capital formation proxied investment. According to the study, value-added tax and Companies Income Tax have a positive and significant impact on investment, whereas customs and excise duties have a negative and significant impact on investment. The study concluded that while value-added tax and Companies Income Tax stimulated investment in Nigeria, customs and excise duties stifled investment. The gap lies in its focus on the relationship between tax reforms and investment, rather than directly addressing how these reforms impact revenue generation. While the study provides valuable insights into the effects of specific taxes—like value-added tax and Companies Income Tax—on investment levels, it does not explore the implications of these findings for overall government revenue. Future research could fill these gaps by examining the interplay between tax reforms, and revenue generation, utilizing more sophisticated econometric methods to analyze time series data. A comprehensive analysis could provide insights into how tax policies can be optimized to stimulate both investment and revenue growth in Nigeria.

Okojie (2021) investigated the effect of taxpayer identification numbers on revenue generation in Kogi State. Their research found that full implementation of the taxpayer identification number has a significant impact on the state's internally generated revenue. The data collected were analyzed using correlation and regression analysis, and the study employs a single equation model in which revenue generation in Kogi State was proxied using internally generated revenue (IGR). The study concluded that full adoption of taxpayer identification numbers in Kogi State has the potential to boost revenue generation within the state. The gap lies in its narrow focus on the impact of taxpayer identification numbers (TIN) specifically within Kogi State, which may limit the applicability of the findings to other regions of Nigeria. While the study effectively demonstrates the positive effect of TIN implementation on internally generated revenue (IGR) in this specific context, it does not address the broader implications of tax reforms across different states or at the national level. Additionally, the study primarily centers on TIN as a single factor influencing revenue generation, without exploring how it interacts with other tax reform initiatives or variables that may also affect revenue, such as compliance rates, tax rates, or economic conditions. Furthermore, the reliance on a single equation model might overlook complex relationships and feedback effects between multiple variables involved in revenue generation. Moreover, integrating various tax reform measures and their collective impact on revenue generation would provide a more comprehensive understanding of how to optimize tax systems for enhanced fiscal performance in Nigeria

Rosen (2021) investigated the impact of tax reforms in Nigeria on revenue generation. The study employs the Ex-post facto research design with time series data spanning thirty-one (31) years

from 1986 to 2020. Companies Income Tax (CIT), Value Added Tax (VAT), and Petroleum Profits Tax (PPT) were used to proxy tax reforms, while total federally collected revenue was used to proxy revenue generation. For analysis, the study employs descriptive statistics, the Augmented Dickey fuller unit root test, ordinary least square (OLS) regressions, the heteroskedasticity test, and the Variance Inflation Factor. According to the study, tax reforms have a positive but statistically significant impact on revenue generation in Nigeria. Additionally, the study utilizes an Ex-post facto research design with time series data, which may limit its ability to establish causal relationships between tax reforms and revenue generation. The reliance on OLS regression may also not fully account for potential issues like multicollinearity or structural breaks in the data, which could impact the reliability of the findings. Furthermore, while the study covers a significant period, it does not consider the influence of external factors-such as economic fluctuations, changes in global oil prices, or political developments-that could affect revenue generation during the study period. Future research could address these gaps by conducting a more nuanced analysis of the individual tax reforms and their specific impacts on revenue generation. Additionally, employing advanced econometric techniques to explore causal relationships and considering external influencing factors would provide a more comprehensive understanding of how tax reforms can effectively enhance revenue generation in Nigeria.

# **Theoretical Review**

## **Optimal Tax Reform Theory**

The Optimal Tax Reform Theory, associated with economists Atkinson and Stiglitz (1980), posits that tax systems should balance efficiency—minimizing economic distortions—with equity—fair distribution of tax burdens. It examines how tax policies influence individual and business behavior, impacting economic activity and revenue generation. The theory asserts that tax reforms should generate sufficient revenue for government needs without overly burdening taxpayers, and must be administratively feasible.

Critics argue that the theory oversimplifies complex real-world behaviors and may prioritize efficiency over equity, potentially increasing wealth inequality. There are also concerns about the lack of empirical support for its assumptions, especially in diverse economic settings.

The study will anchor on this theory as it provides a valuable framework for evaluating tax reforms' effects on revenue generation in Nigeria, addressing challenges like tax evasion and inefficiency. By applying the theory, the study aims to contribute insights relevant to developing countries and improve understanding of stakeholder reactions to tax reforms. Overall, this approach offers a nuanced perspective on the implications of tax reforms for revenue generation in Nigeria.

## 3. Methodology

This study adopts the ex-post facto research design. The rationale for this was that the study seeks to discover the factors associated with specific occurrences, outcomes, conditions, or types of behavior by analyzing previous events or already existing conditions to predict future outcomes. Also, the researcher cannot manipulate the data and outcome of the study. The study covers the Nigerian economy with time series data being used. Data relating to revenue from value-added tax, Companies 'Income Tax, Petroleum profit tax, and federally collected revenue is adopted for the study. The data covered a period of forty –three (43) years, ranging from 1980-2023 for both the dependent variable and the independent variables. The data spans a period of forty-three years, from 1980 to 2023, providing a comprehensive view of the long-term trends and impacts of tax reforms on revenue generation. This extensive timeframe allows for robust analysis of various economic conditions and policy changes, enabling the identification of patterns and relationships between the dependent and independent variables.

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The data for this study is obtained mainly from secondary sources. The secondary data that relates to selected taxes (Companies 'Income Tax, Petroleum Profits Tax, and Value Added Tax) and federally collected revenue is collected from the Central Bank of Nigeria Statistical Bulletin and National Bureau of Statistics annual reports for the regression analysis.

The study employs several data analysis techniques, including descriptive statistics, the Augmented Dickey-Fuller unit root test, Ordinary Least Squares (OLS) multiple regression, heteroskedasticity testing, and the Variance Inflation Factor (VIF). These methods are used to evaluate the impact of tax reforms—specifically Company Income Tax (CIT), Petroleum Profit Tax (PPT), and Value Added Tax (VAT)—on revenue generation in Nigeria. The model for this study was adapted from the study done by Musa, (2020) who examined the effects of tax reforms on revenue generation in Nigeria as shown below:

 $FCR_{t} = \alpha + \beta_{1} CIT_{t} + \beta_{2} PPT_{t} + \varepsilon_{t}$ The model was modified by adding value-added tax and was adopted and the new model is shown below  $FCR_{t} = \alpha + \beta_{1} CIT_{t} + \beta_{2} PPT_{t} + \beta_{3} VAT_{t} + \varepsilon_{t}$ iii

Where

 $FCR_t$  = Federally collected revenue for the period covered

 $CIT_t = Companies tax for the period covered$ 

 $PPT_t = Petroleum profits tax for the period covered$ 

 $VAT_t = Value Added tax for the period covered$ 

 $\alpha$  = Constant Term

 $\beta$  = Beta coefficient

 $\varepsilon = error$ 

# 4. Result and Discussions

The findings from the data analysis regarding the impact of tax reform on revenue generation are outlined below, including descriptive statistics, a summary of stationarity test results, an overview of regression analysis, a heteroskedasticity test, and the variance inflation factor

## Table 1 Descriptive Statistics Test Result

## **Descriptive Statistics**

Statistic	CIT (N'B)	PPT (N'B)	VAT (N'B)	FCR (N'B)
Mean	190065.3	2247135.0	92492.33	5627.68
Median	21936.5	63604.0	3611.37	5434.2
Maximum	1180407.0	32010000.0	564890.0	15234.0
Minimum	561.5	1516.9	5.03	25.38
Std. Dev.	315746.7	6599417.0	154280.9	4709.34
Skewness	1.7998	4.1734	1.923	0.3436
Kurtosis	2.2686	17.0979	3.0191	-1.1322
Jarque-Bera	28.6653	536.1362	23.5379	3.1936
Probability	5.96e-07	0.0	7.741e-06	0.2025
Sum	8362874.0	98873930.0	2774770.0	247617.7
Sum Sq. Dev.	$4.29 \times 10^{12}$	$1.87 \times 10^{15}$	6.90 × 1011	9.54 × 10 <sup>8</sup>
Observations	44	44	30	44

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The descriptive statistics table provides important insights into the distribution and characteristics of the CIT (Company Income Tax), PPT (Petroleum Profit Tax), VAT (Value-Added Tax), and FCR (Federally Collected Revenue) data from 1980 to 2023. CIT (N'B) Mean \$190,065.30 billion indicates the average CIT collected over the period. Median \$21,936.50 billion, which is much lower than the mean, shows that the distribution is right-skewed, meaning most years collected below the mean value. Skewness 1.8 confirms the right skew, suggesting a few high collection years. Kurtosis 2.27, close to normal distribution (3), indicates moderate outliers. Maximum \$1,180,407.00 billion (highest tax collected). Minimum \$561.50 billion (lowest tax collected). Std. Dev. \$315,746.70 billion shows significant variability in CIT collections over the years. PPT (N'B). Mean \$2,247,135.00 billion shows higher average revenue than CIT, reflecting the oil sector's dominance in Nigeria. Median \$63,604.00 billion, far below the mean, suggests that PPT data is highly skewed by a few very large values. Skewness 4.17 shows extreme right skew, with a few years (e.g., 2011–2012) of extraordinarily high PPT. Kurtosis 17.10 indicates heavy-tailed distribution with extreme outliers. Maximum \$32,010,000.00 billion is the peak PPT year. Std. Dev. \$6,599,417.00 billion underlines the volatility and dependency on oil prices.

VAT (N'B). Mean №92,492.33 billion suggests VAT revenues were generally lower compared to CIT and PPT. Median №3,611.37 billion, indicating VAT is a relatively new revenue stream. Skewness 1.92 implies a moderate right skew with a concentration of lower VAT collections and a few high ones. Kurtosis 3.02 suggests that VAT values are somewhat close to normal distribution with some outliers. Maximum №564,890.00 billion represents the highest VAT collection. Std. Dev. №154,280.90 billion shows moderate variability.

FCR (N'B) Mean \$5,627.68 billion is the average federal revenue across the years. Median \$5,434.20 billion is very close to the mean, suggesting a more balanced distribution. Skewness 0.34 indicates near symmetry in the data. Kurtosis -1.13 shows a slightly flat distribution. Maximum \$15,234.00 billion, while the Minimum is \$25.38 billion, reflecting periods of low and high revenue. Std. Dev. \$4,709.34 billion shows considerable fluctuations.

CIT and VAT have more moderate variability and skewness compared to PPT, which exhibits extreme outliers due to volatile oil prices. FCR shows relatively consistent revenue streams with less skewness and kurtosis. The Jarque-Bera tests for CIT, PPT, and VAT suggest these distributions are not normal (significant skewness and kurtosis), especially for PPT, which shows extreme non-normality.

**Unit Root Test** 

Variable	Test Statistic	p- value	Lags Used	Number of Observations	Critical Values (1%, 5%, 10%)
CIT (N'B)	6.5856	1.0000	10	33	{'1%'3.6461, '5%'2.9541, '10%' 2.6158}
PPT (N'B)	-2.4991	0.1157	2	41	{'1%'3.6010, '5%'2.9351, '10%' 2.6056}
VAT (N'B)	-2.0077	0.2832	0	29	{'1%'3.6791, '5%'2.9679, '10%' 2.6230}
FCR (N'B)	-2.1672	0.2184	0	43	{'1%'3.5925, '5%'2.9315, '10%' 2.6031}

Table 2 Unit Root Test

CIT (N'B). The test statistic is 6.5856 with a p-value of 1.0000, which is greater than 0.05, indicating that the null hypothesis of a unit root (non-stationarity) cannot be rejected. This means that CIT is

non-stationary.PPT (N'B). The test statistic is -2.4991 with a p-value of 0.1157. While lower than CIT, it is still above 0.05, suggesting non-stationarity for PPT.VAT (N'B). The test statistic is -2.0077 with a p-value of 0.2832, also indicating non-stationarity. FCR (N'B). The test statistic is -2.1672 with a p-value of 0.2184, indicating that FCR is also non-stationary. All four variables (CIT, PPT, VAT, FCR) are non-stationary based on the ADF test results, meaning they contain unit roots. Non-stationary time series tend to show trends, making them unsuitable for traditional time series analysis without transformation (e.g., differencing)

VAR Lag Order Selection Criteria						
Endogenous	variables. CIT,	FCR, PPT, VAT				
Exogenous v	variables. C					
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1123.921	NA	5.28e+41	107.4210	107.6200	107.4642
1	-1080.173	66.66343	3.90e+40	104.7784	105.7731	104.9943
2	-1016.225	73.08320	4.95e+38	100.2119	102.0025	100.6005
3	-941.7485	56.74398*	3.43e+36*	94.64271*	97.22915*	95.20403*
* indicates l	lag order selected	by the criterion				
LR. sequential modified LR test statistic (each test at 5% level)						
FPE. Final p	prediction error					
AIC. Akaike information criterion						
SC. Schwarz information criterion						
HQ. Hannan-Quinn information criterion						

# Table 3 Lag length Selection Criteria

# Lag length Selection Criteria

# Source. Authors' Computation, (2024)

The LogL values indicate the goodness of fit of the model at different lag lengths. Higher LogL values suggest a better fit.

The table includes results for lag lengths from 0 to 3. Each column provides different criteria for evaluating the appropriate lag length. LR (Likelihood Ratio). This statistic tests the null hypothesis that the additional lag does not improve the model significantly. Asterisks (\*) denote the lag order selected by this criterion. FPE (Final Prediction Error). This criterion estimates the error associated with a model and favors lower values. Lag 3 has the lowest FPE (3.43e+36), indicating it is the most efficient model. AIC (Akaike Information Criterion). The AIC is used for model selection, with lower values preferred. Lag 3 (94.64271) offers the best AIC score, indicating optimal fit. SC (Schwarz Criterion). Similar to AIC but with a stronger penalty for additional parameters. Lag 3 also has the lowest SC (97.22915). HQ (Hannan-Quinn Criterion). Like the AIC and SC, the HQ criterion also indicates that lag 3 is preferred (95.20403).

Optimal Lag Selection.

All criteria (LR, FPE, AIC, SC, and HQ) suggest that Lag 3 is the optimal choice, marked with an asterisk. This lag length is consistent across the key selection criteria, confirming the robustness of the selection. The results from the lag length selection criteria indicate that using Lag 3 is optimal for the VAR model involving CIT, FCR, PPT, and VAT. This choice balances model complexity with fit, ensuring a reliable representation of the relationships between the variables. Utilizing this lag length in subsequent analyses will help enhance the accuracy of forecasts and inferences drawn from the model.

Table 4	Cointegration	test
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Unrestricted Cointe	egration Rank Te	est (Trace)				
Hypothesized		Trace	0.05			
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**		
None *	0.983656	169.0579	47.85613	0.0000		
At most 1 *	0.880978	82.66659	29.79707	0.0000		
At most 2 *	0.793163	37.96926	15.49471	0.0000		
At most 3 *	0.207241	4.876947	3.841466	0.0272		
Trace test indicate	s 4 cointegrating	g eqn(s) at the 0.0	05 level			
* denotes rejection	n of the hypothes	sis at the 0.05 lev	/el			
**MacKinnon-Ha	**MacKinnon-Haug-Michelis (1999) p-values					
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)						
Hypothesized		Max-Eigen	0.05			
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**		
None *	0.983656	86.39127	27.58434	0.0000		
At most 1 *	0.880978	44.69733	21.13162	0.0000		
At most 2 *	0.793163	33.09232	14.26460	0.0000		
At most 3 *	0.207241	4.876947	3.841466	0.0272		
Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level						
* denotes rejection of the hypothesis at the 0.05 level						
**MacKinnon-Haug-Michelis (1999) p-values						

### **Cointegration test**

Source. Authors' Computation, (2024)

The Trace statistics show the following results for the hypothesized number of cointegrating equations (CEs). None. The test statistic is 169.0579, significantly exceeding the critical value of 47.85613, p-value of 0.0000. This indicates the rejection of the null hypothesis of no cointegration. At most 1. The statistic is 82.66659, again exceeding the critical value of 29.79707 (p-value 0.0000), allowing rejection of the hypothesis of at most one cointegrating relationship. At most 2. The test statistic of 37.96926 surpasses the critical value of 15.49471 (p-value 0.0000), suggesting at least two cointegrating relationships exist.

At most 3. The statistic is 4.876947, which exceeds the critical value of 3.841466 (p-value 0.0272), allowing rejection of the null hypothesis of at most three cointegrating equations.

Overall, the Trace test indicates 4 cointegrating equations at the 0.05 significance level, implying that the variables are cointegra

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None. The statistic of 86.39127 far exceeds the critical value of 27.58434 (p-value 0.0000), leading to the rejection of the null hypothesis.

At most 1. The statistic of 44.69733 surpasses the critical value of 21.13162 (p-value 0.0000), indicating at least two cointegrating equations.

At most 2. The test statistic of 33.09232 exceeds the critical value of 14.26460 (p-value 0.0000), suggesting there are at least three cointegrating relationships.

At most 3. The statistic of 4.876947 exceeds the critical value of 3.841466 (p-value 0.0272), rejecting the null hypothesis of at most three cointegrating equations.

The Max-Eigenvalue test also indicates 4 cointegrating equations at the 0.05 level.

(11.8443)

 Table 5 Johansen Normalisation coefficient

1 Cointegrating Equation(s).		Log likelihood	-983.0818
Normalized cointegrating coeff	icients (standard error in parenth	neses)	
FCR	CIT	PPT	VAT
1.000000	0.004426	-0.000933	-0.023723
	(0.00108)	(8.9E-05)	(0.00165)
	(4.09814)	(-104.8314)	(14.37757)
Adjustment coefficients (standa	rd error in parentheses)(t-statist	ic)	
D(FCR)	-0.412710		
	(0.18428)	]	
D(CIT)	-59.25614	]	
	(10.6175)		
D(PPT)	-179.8551		
	(515.396)		
D(VAT)	10.30829		

### Source. Authors' Computation, (2024)

The log likelihood of the model is -983.0818, providing a measure of the goodness of fit for the estimated cointegration equation.

The coefficients of the cointegrating equation are provided for each variable, normalized to FCR. FCR. 1.000000 (normalized for reference) CIT. 0.004426 PPT. -0.000933 VAT. -0.023723

The coefficients indicate the long-term relationships among the variables. A positive coefficient for CIT suggests that an increase in CIT is associated with a small increase in FCR. The negative coefficients for PPT and VAT imply that increases in these taxes are associated with decreases in FCR, indicating that as property and value-added taxes increase, the fiscal capacity ratio declines, possibly due to higher taxation burdens. The Johansen normalization coefficients reveal significant long-term relationships among FCR, CIT, PPT, and VAT. The negative relationships for PPT and VAT with FCR highlight the complex interplay between taxation and fiscal capacity, where higher taxes may hinder fiscal health. The adjustment coefficients indicate that CIT reacts most strongly to deviations from equilibrium, suggesting it plays a crucial role in fiscal adjustments. These insights will be important for policymakers aiming to understand how tax reforms might influence overall fiscal capacity and stability in the long run.

Cointegrating Eq.	CointEq1
FCR(-1)	1.000000
CIT(-1)	0.004426
	(0.00108)
	( 4.11570)
PPT(-1)	-0.000933

#### Table 6 Cointegration long run model

	(8.9E-05)	
	(-10.5269)	
VAT(-1)	-0.023723	
	(0.00165)	
	(-14.3769)	
C	517.9364	
Standard errors in () & t.statistics in	()	

Source. Authors' Computation, (2024)

Table 6 presents the results of the long-run cointegration model, specifically detailing the relationship among the variables. Fiscal Capacity Ratio (FCR), Companies Income Tax (CIT), Property Tax (PPT), and Value-Added Tax (VAT). The results are expressed in terms of the cointegrating equation. The positive coefficient for CIT suggests that an increase in Companies Income Tax has a slight positive effect on the Fiscal Capacity Ratio, indicating a small long-term relationship where higher CIT contributes to the fiscal capacity. PPT (-1) -0.000933. Standard Error (8.9E-05). T-Statistic (-10.5269). The negative coefficient for PPT indicates that increases in Property Tax are associated with a decrease in the Fiscal Capacity Ratio. The significant t-statistic suggests that this relationship is robust and negative in the long term.

VAT (-1). -0.023723

Standard Error. (0.00165). T-Statistic. (-14.3769) similarly, the negative coefficient for VAT implies that an increase in Value-Added Tax is associated with a more considerable reduction in the Fiscal Capacity Ratio. This relationship is also statistically significant, reflecting the strong impact of VAT on fiscal capacity.

Constant (C). 517.9364. This constant term indicates the intercept of the long-run relationship, providing a baseline level of FCR when all other variables are held constant. It suggests a foundational fiscal capacity level, regardless of tax levels. The long-run cointegration model reveals significant relationships among FCR, CIT, PPT, and VAT. While CIT shows a slight positive association with fiscal capacity, both PPT and VAT have negative effects, indicating that higher property and value-added taxes can detract from fiscal health in the long term. The results are statistically significant and provide valuable insights for policymakers. Understanding these long-term relationships is essential for designing tax policies that enhance fiscal capacity and overall economic stability.

System. UNTITLED					
	Coefficient	Std. Error	t-Statistic	Prob.	
C(1)	-0.412710	0.184278	-2.239611	0.0302	
C(2)	0.002678	0.375719	0.007129	0.9943	
C(3)	0.117602	0.578411	0.203320	0.8398	
C(4)	-0.007492	0.006223	-1.204014	0.2350	
C(5)	0.006693	0.006672	1.003162	0.3213	
C(6)	-0.000182	0.000110	-1.648910	0.1063	
C(7)	-0.000109	0.000135	-0.806405	0.4243	
C(8)	0.004698	0.005244	0.895839	0.3752	
C(9)	0.002899	0.004595	0.630964	0.5313	
C(10)	139.4974	520.4018	0.268057	0.7899	
Determinant residual covariance	e	5.39E+35			
Equation. $D(FCR) = C(1)^*(FCR(-1) + 0.00442611783037^*CIT(-1) - 0.0009329441955^*PPT(-$					
1) $-0.023723139669*VAT(-1) + 517.936419941) + C(2) *D(FCR(-1)) + C(3)*D(FCR(-2)) +$					

Table 7	System	equation o	of short run	variables
	•			

C(4)*D(CIT(-1)) + C(5)*D	(CIT(-2)) + C(6)*D(PPT(-1)) + C(7)*D(PPT(-2)) + C(8)*D(VAT(1)) + C(9)*D(VAT(-2)) +
C(10)	
Observations. 21	
R-squared	0.626245
Adjusted R-squared	0.520446
S.E. of regression	1358.315
Durbin-Watson stat	1.956751

Source. Authors' Computation, (2024)

Table 7 presents the results of the system equation for short-run dynamics, specifically analyzing the changes in the Fiscal Capacity Ratio (FCR) based on lagged values of itself (FCR), Companies Income Tax (CIT), Property Tax (PPT), and Value-Added Tax (VAT). The system equation of short-run variables illustrates that the adjustment of the Fiscal Capacity Ratio is significantly influenced by its previous value, reflecting a corrective mechanism toward long-run equilibrium. While the coefficient for C (1) indicates that deviations from long-term equilibrium have a meaningful short-term impact, the other variables' lagged changes do not significantly contribute to predicting FCR's immediate change. Overall, the model shows a reasonable fit, with significant room for improvement in explaining changes in fiscal capacity. Policymakers can utilize this analysis to understand the responsiveness of fiscal capacity to short-run fluctuations in tax variables, though further refinement may be necessary for more robust predictions.

#### **Discussion of Findings**

As discussed earlier in this chapter, the study seeks to address three research questions, from which the objectives and hypotheses were formulated. The statistical analysis indicates that Companies Income Tax (CIT) has a negative but statistically significant impact on revenue generation in Nigeria, reflecting an inverse relationship between the dependent and independent variables. In other words, an increase in CIT leads to a decrease in revenue generation, and vice versa. In contrast, petroleum profits tax (PPT) exhibits a positive and statistically significant effect on revenue generation, signifying a direct relationship between the two. As PPT increases, revenue generation also rises. Likewise, value-added tax (VAT) has a positive and statistically significant effect on revenue generation, meaning higher VAT results in increased revenue. These findings align with prior research by Dorathy (2018), Sunday (2020), Moses (2021), Jonathan (2022), and Ahemen, (2022) who concluded that tax reforms positively and significantly influence revenue generation. However, this study contradicts the findings of Nwokoye and Rolle (2015), who found that Companies Income Tax negatively and significantly affects revenue generation in Nigeria.

### **Conclusion and Recommendations**

The main objective of this study is to empirically assess the impact of various tax reforms, from the introduction of value-added tax (VAT) in 1980 to the implementation of the National Tax Policy up to the present, on federally collected revenue in Nigeria. Following the statistical analysis conducted in results and discussion, the study arrives at several conclusions. It finds that tax reforms significantly influence revenue generation in Nigeria, indicating that as tax rates rise, revenue generation increases, and vice versa.

However, the study also concludes that these tax reforms demonstrate an inverse relationship with revenue generation, suggesting that while higher taxes can boost revenue in the short term,

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certain factors may lead to a decline in overall revenue in the long term. This paradox indicates that the relationship between tax reforms and revenue generation is more intricate than a straightforward direct correlation. Building on these findings and conclusions, the study presents a series of recommendations designed to enhance the effectiveness of tax reforms and optimize their impact on revenue generation in Nigeria. These recommendations aim to assist policymakers in making adjustments that improve tax administration and foster economic growth while ensuring sustainable revenue streams. The recommendations are.

- i. The study reveals that tax reforms designed to enhance the tax system, curb tax avoidance and evasion, and alleviate the tax burden—such as decreasing the Companies Income Tax (CIT) rate from 30% to 20%—can bolster the government's ability to generate revenue through taxation. Lowering the CIT rate to 20% aligns with the broader objectives of stimulating economic activity, expanding the tax base, and ensuring long-term revenue growth. The strategy requires complementary measures such as improving tax administration, strengthening compliance mechanisms, and enhancing economic policies to maximize its benefits.
- ii. To enhance the effectiveness of the petroleum profits tax (PPT) on Nigeria's revenue base, the government should prioritize the reduction or elimination of corruption and inefficiencies within the administration of PPT. Addressing these issues would significantly boost the efficiency of PPT collection and increase national revenue.
- iii. The study recommends increasing the VAT rate on luxury goods from the current 7.5% to approximately 10%, while keeping the rate on essential goods at 7.5%. It also suggests cultivating a robust billing culture, raising consumer awareness about the importance of requesting receipts, streamlining the processes for tax reductions and VAT refunds, and discouraging sellers from seeking excessive tax credits. Additionally, enhancing collaboration among VAT personnel, correcting sellers' record-keeping errors, and providing relevant training for VAT officials are crucial steps to improve VAT administration and efficiency.

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