Effect of Tax Policies on Income Inequality in Nigeria

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Abstract		Original Research Article

No country can achieve equitable economic growth without an effective tax system that promotes fair wealth distribution. Nigeria faces persistent income inequality, and addressing it requires well-structured fiscal measures. This study investigated the effect of tax policies, specifically Value Added Tax (VAT) and Petroleum Profit Tax (PPT) on income inequality in Nigeria within the period 1999–2023. Using secondary time series data analyzed with the Ordinary Least Squares (OLS) regression technique, the findings reveal that both VAT and PPT have significant negative effect on the Gini coefficient, indicating that they helped reduce income inequality during the study period. Based on these results, the study recommends that VAT should be structured to exempt basic and essential goods so that the tax burden does not disproportionately fall on the poor. Additionally, Petroleum Profit Tax revenue should be efficiently utilized and invested in healthcare, social development, and other essential sectors to promote inclusive growth and equitable distribution of resources.

Keywords: Value added tax, tax policy, income inequality, petroleum profit tax, economic growth.

1. INTRODUCTION

Income inequality refers to the unequal distribution of income and wealth within a population, which is often measured using statistical indicator like the Gini index, where higher values indicate greater inequality (UNDP, 2020). According to Kopp (2021), income inequality is "an extreme disparity of income inequality with a high concentration of income usually in the hands of a small percentage of a population" As a key indicator of economic and social well-being, it has far-reaching implications for economic growth, social mobility, and overall quality of life.

In an ideal society, income is distributed equitably, ensuring that all individuals have access to resources, opportunities, and a decent standard of living. Such an environment fosters social cohesion, reduces poverty, and promotes sustainable economic growth. However, in Nigeria, income inequality remains a pressing issue, characterized by a significant disparity between the wealthy and the poor. The richest 10% of the population controls a disproportionate share of the nation's wealth, while over 40% of Nigerians live below the poverty line, struggling with limited access to education,

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25

healthcare, and employment opportunities (NBS, 2022; World Bank, 2025).

Taxes are compulsory payments made by individuals, businesses, or organizations to the government, used to fund public goods, services, and infrastructure that benefit society as a whole. Taxes are a key instrument for addressing income inequality. Progressive taxation—where higher-income earners pay a larger share helps redistribute wealth, while regressive taxes (such as VAT) disproportionately impact lower-income groups. The effectiveness of taxes in reducing income inequality depends on their structure and implementation.

This study focuses on the role of Value Added Tax (VAT), and Petroleum Profit Tax (PPT), in shaping income distribution in Nigeria. The allocation of tax revenue also influences inequality; investments in social welfare, education, and healthcare tend to reduce inequality, while poor allocation can exacerbate it. Furthermore, tax evasion and avoidance by wealthy individuals and corporations undermine the redistributive function of taxes, increasing inequality. Indirect taxes, such as value-added taxes (VAT), often burden low-income households more heavily, though exemptions on essential goods can mitigate their impact. Taxes on capital gains, inheritance, and property can reduce wealth concentration if applied effectively, while tax incentives for economic growth can either alleviate or worsen inequality, depending on their distributional effects. Effective tax policy design is essential for reducing income inequality while fostering sustainable economic growth.

Lam, (2017) investigated the impact of demographic variables on income distribution within the United States. The study focused on factors such as age distribution, fertility, marriage, migration, and mortality, examining how changes in population composition may affect income inequality. The study highlights that demographic changes significantly affect income distribution, although much of this can be attributed to shifts in labor demand. Another study identifies a positive correlation between unemployment and income inequality across various economies (Cysne & Turchick, 2012). However, this relationship is evident only when the unemployment

rate remains below 15%. Additionally, a separate study examines the interplay between poverty, growth, and inequality in developing countries, analyzing the poverty-reduction outcomes of global economic growth since the early 1990s (Kwasi Fosu, 2016). This research differentiates between declining poverty rates and the simultaneous increases or decreases in income inequality, underscoring the complex relationship between these variables. In addition to these, there is one more factor availability of natural resources. Countries that are well endowed with natural resources tend to have greater inequality because of capital-based technology and a lower need for unskilled labour (Cornia and Kiiski, 2001).

Income inequality in Nigeria is shaped by various factors such as demographics, unemployment, and access to resources. While taxes play a vital role in redistributing wealth and funding social services, limited empirical evidence exists on their specific impact on income inequality in Nigeria. Most previous studies have focused on tax revenue generation rather than the distributive effects of different taxes. This study seeks to fill this gap by examining the effects of taxes, such as Value Added Tax (VAT), Customs and Excise Duties (CED), Petroleum Profit Tax (PPT), and Company Income Tax (CIT) on income inequality in Nigeria, using the Gini coefficient as a measure of inequality. By focusing on the direct relationship between tax structures and income disparities, the study aims to provide evidence-based recommendations for designing tax policies that effectively address income inequality in Nigeria.

2. LITERATURE REVIEW
Theoretical Literature Review

Kuznets Curve

The Kuznets Hypothesis, proposed by Simon Kuznets in 1955, suggests that as an economy develops, income inequality tends to rise during the early stages of growth and then decline in the later stages. This pattern emerges because industrialization and economic transformation initially benefit certain groups more than others. For example, as people move from rural to urban areas, wage disparities increase, and capital accumulates

among those who can invest in new industries. Over time, however, continued development leads to broader access to education, improved labor conditions, and redistributive government policies, which help reduce inequality and promote a fairer distribution of income. Although influential, the theory faces criticism for relying on limited and historically specific data that may not reflect all countries' experiences. Modern evidence shows that inequality does not always decline with economic growth due to factors like globalization, technology, and institutional differences. For Nigeria, the hypothesis highlights the need to align tax and fiscal policies with its stage of development, using progressive taxation to curb rising inequality or maintaining equitable growth if inequality is already falling.

Empirical Literature Review

There are several prior empirical studies conducted on the relationship between taxes and income inequality in different societies. Some of these previous empirical works are reviewed below with a view to observing the trend of the findings on the subject matter. Let us examine some of the significant works beginning with the earliest date to the most recent date.

Taxation and Income Inequality

With respect to relevant studies conducted for Nigeria, Oboh and Eromonsele (2018) examined the relationship between taxation and income inequality in Nigeria from 1980 to 2014 using the Error Correction Model (ECM) framework. Their findings revealed that indirect taxes exerted a negative and significant impact on income inequality, indicating that higher indirect taxation was associated with a reduction in inequality. Conversely, direct taxes had a positive impact, implying that they contributed to widening the income gap between the rich and the poor. The study concluded that effective tax administration and greater reliance on indirect taxes could help mitigate inequality in Nigeria.

In a related study, **Omesi and Appah (2021)** analyzed the long-run relationship between taxes and

inequality for the period 1980–2018 using cointegration and ECM techniques. They reported that personal income tax and company income tax had significant negative effects on income inequality, while value added tax (VAT) showed a negative but statistically insignificant effect, suggesting that direct taxes can serve redistributive purposes when well administered. Similarly, **Okoh et al. (2021)** focused on direct taxes and income redistribution in Nigeria and concluded that personal income tax and petroleum profit tax had significant positive effects on income redistribution, thereby reducing inequality in the Nigerian context. However, **Jolaiya (2024)** offered a nuanced perspective in a study on indirect taxation and income inequality in Nigeria, finding that while stamp duties reduced inequality, customs and excise duties as well as VAT were positively associated with the Gini coefficient, indicating that they may exacerbate inequality. More recently, Appah and Sokari **(2023)** examined the relationship between taxes and income inequality between 1980 and 2020 and observed that personal income tax, VAT, and customs and excise duties all had positive but statistically insignificant relationships with the Gini coefficient, implying that taxation during the study period did not have a substantial redistributive impact. Collectively, these studies highlight that while some forms of taxation—particularly well-structured direct taxes—can mitigate inequality, others, such as certain indirect taxes, may have the opposite effect. The differences in findings underscore the complexity of Nigeria's fiscal structure and the importance of tax design and administration in achieving equitable income distribution.

VAT and Income Inequality

Several studies have examined the impact of Value Added Tax (VAT) on income inequality in Nigeria, often highlighting its regressive nature and potential to exacerbate disparities. For instance, Anyaduba and Otulugbu (2019) found that VAT, along with Customs and Excise Duties, significantly contributes to income inequality in Nigeria. They noted that lower-income households, which spend a larger

proportion of their income on consumption, bear a heavier tax burden relative to their income than the wealthy, thereby widening the income disparity.

Similarly, Appah and Iweias (2023) investigated the relationship between various taxes and income inequality in Nigeria from 1980 to 2020. Their study revealed a positive but statistically insignificant relationship between VAT and the Gini coefficient, suggesting that while VAT may influence income inequality, its effect is not strong or consistent over the period studied. In contrast, a study by the International Centre for Tax and Development (ICTD) quantitatively assessed the equity and redistributive effects of VAT reforms in Nigeria. Utilizing data from the 2018/2019 Nigeria Living Standard Survey, the study found that VAT is regressive, meaning it disproportionately affects lower-income households. The Kakwani Index, used to measure the progressivity of taxes, indicated that VAT reforms in Nigeria had limited redistributive effects, reinforcing concerns about its regressive impact. These studies collectively underscore the need for careful consideration of VAT's impact on income inequality in Nigeria. While VAT serves as a significant revenue source, its regressive nature necessitates complementary policies, such as exemptions for essential goods and services, to mitigate its adverse effects on low-income households.

PPT and Income Inequality

Several studies have examined the relationship between Petroleum Profit Tax (PPT) and income inequality in Nigeria, yielding varied findings. For instance, a study by Omesi and Appah (2021) analyzed the effects of taxes on income inequality from 1980 to 2018. Their findings indicated that PPT had a significant negative relationship with income inequality, suggesting that higher PPT revenues could potentially reduce income disparities. Conversely, research by Appah and Sokari (2023)

covering the period from 1980 to 2020 found a positive but statistically insignificant relationship between PPT and the Gini coefficient, implying that PPT's impact on income inequality was minimal during that period. In contrast, a study by Erasmus (2025) reported a positive relationship between PPT and income inequality, suggesting that increases in PPT could exacerbate income disparities in Nigeria. These conflicting results highlight the complex and context-dependent nature of PPT's impact on income inequality in Nigeria. Factors such as tax administration efficiency, the utilization of PPT revenues, and the broader economic environment likely influence the extent to which PPT affects income distribution. Therefore, while PPT has the potential to reduce income inequality, its effectiveness is contingent upon effective governance and strategic allocation of the generated revenues.

Despite extensive research on taxation and income inequality, there is a lack of studies that specifically examine the effects of taxes on income inequality in Nigeria using the gini coefficient as a measure. Additionally, limited research comprehensively analyzes how different tax structures interact with economic openness and globalization in the Nigerian context. This study aims to address these gaps by employing the Gini coefficient to measure income inequality in Nigeria, assessing the effectiveness of different taxes such as VAT, and PIT, and providing policy recommendations for tax reform to improve income distribution. By doing so, the study will contribute to a more nuanced understanding of tax policy implications on inequality in Nigeria and offer valuable insights for policymakers.

3. RESEARCH METHODOLOGY

3.1 Data and Variable Descriptions

Data sources, nature and measurement are described in Table 3.1 below

Table 3.1: Data sources and measurement

Variables	Measurement	Unit of measurement	Source of data	Justification for proxy
Income inequality (GINI)	Gini Coefficient	0-1	World bank index (WDI), NBS	It provides an easily interpretable measure of income distribution within a population.
Value added tax (VAT)	N Billion	% of value of goods or services sold	CBN, Statistical Bulletin, FIRS	It reflects the impact of consumption-based taxation on income distribution and household welfare
Petroleum profit tax (PPT)	N Billion	Amount of tax payable on profits earned from petroleum operations	CBN, Statistical Bulletin, FIRS	It reflects the contribution of petroleum related fiscal policy to government revenue and its potential impact on income distribution.
Education expenditure	N Billion	% of GDP or total government expenditure.	NBS, World bank index (WDI)	It reflects the level of investment in human capital which can influence income distribution.

Definition of Variables and Justification

Income Inequality: Income inequality refers to the unequal distribution of income or wealth among individuals or groups within a society, where some earn substantially more than others. It captures disparities in economic well-being and living standards, highlighting gaps between different segments of the population. Common measures include the Gini coefficient, Lorenz curve, and income quintile ratios, which quantify how far income distribution deviates from perfect equality.

In this study, income inequality is a key variable because it reflects how taxation such as direct taxes, VAT, and Petroleum Profit Tax (PPT) affects wealth distribution. Analyzing it helps evaluate whether Nigeria's fiscal policies reduce or exacerbate economic disparities and informs strategies for progressive taxation and redistribution.

Value added tax (VAT): Value Added Tax is a consumption tax paid when goods are purchased and services rendered It is a multi-stage tax. VAT is borne by the final consumer. All goods and services (produced within or imported into the country) are taxable except those specifically exempted by the VAT Act VAT is charged at a rate of 7.5%. Some goods and services such as non-oil exports are zero rated All taxable persons are required to file VAT monthly returns not later than 21st day following the month of transaction. This variable represents a major consumption-based tax that directly affects household incomes and can influence income inequality by redistributing wealth through government revenue.

Petroleum Profit Tax (PPT): The Petroleum Profit Tax (PPT) is a tax imposed on companies engaged in upstream petroleum operations in Nigeria, covering exploration, production, transportation, and the initial sale of crude oil and natural gas. Governed by the Petroleum Profit Tax Act (PPTA) and administered by the Federal Inland Revenue Service (FIRS), it ensures the government receives a fair share of revenue from the oil and gas sector. This variable captures the impact of petroleum related government revenue on income distribution.

Education Expenditure: Education expenditure refers to the allocation of financial resources by governments or institutions toward the provision, maintenance, and improvement of educational services. This includes spending on primary, secondary, and tertiary education, teacher salaries, infrastructure, learning materials, and educational programs. Measuring education expenditure helps assess a country's commitment to human capital development and its potential impact on economic growth, social mobility, and equitable opportunities. In this study, education expenditure is an important variable because it can influence income distribution. Increased investment in education enhances access to skills and knowledge, particularly for lower-income groups, thereby reducing income inequality over time. It helps evaluate how government spending on human capital interacts with taxation policies to promote equitable economic growth in Nigeria.

3.2 Model Specification

The model used in this study is a modification on the model of Martinez Vazquez, Vulovic & Moreno-Dodson (2012), Ilaboya & Ohonba (2013), Maina (2017), Oboh & Eromonsele (2018) and Anyaduba & Otubugbu (2019). The functional form of the model used in the study is specified as follows:

GINI = f (PIT, CIT, PPT, CED, VAT, HEX, EDX)

Where: GINI (Gini coefficient), PIT (Personal Income Tax), Cl (Company Income lax, P (Petroleum Profit Tax), CED (Custom & Excise Duty), VAT (Value Added Tax), HEX (Heal Expenditure and EDX (Education Expenditure).

This study then modifies the model and presents it as follows:

GINI = f (PPT, VAT, EDU)

Where: GINI (Gini coefficient), PPT (Petroleum Profit Tax), VAT (Value Added Tax), and EDU (Education Expenditure).

From equation 1, the econometric form is stated thus:

$LGINI = \beta_0 + \beta_1 \, LPPT + \beta_2 \, VAT + \beta_3 \, LEDU + \mu_2$

Where: β_0 = intercept; β_1 = coefficient of parameter PPT; β_2 = Coefficient of parameter VAT; β_3 = Coefficient of parameter EDU.

Theoretically, it is expected that, petroleum profit tax, value added tax, education expenditure and inflation would be expected to have negative relationship with income inequality in Nigeria.

The equation provided is a multiple regression equation, where gini coefficient is the dependent variable, and the other variables (VAT, and PPT) are independent variables that are believed to be related to income inequality in Nigeria.

The coefficients (**β_1, β_2**) represent the expected change in the Gini coefficient with a one-unit change in the corresponding independent variable, holding all other variables constant. Specifically, represents the intercept, or the value of the gini coefficient when all independent variables are zero. The error term (**μ_2**) represents the unexplained variation in income inequality that is not accounted for by the independent variables in the equation.

Overall, this equation can be used to estimate the impact of taxes on income inequality in Nigeria. Specifically, it examines whether taxation contributes to reducing income disparities or exacerbating inequality. However, it is important to note that this is a simplified representation of the complex relationship between taxation and income distribution. Other economic, social, and institutional factors not included in the equation may also influence income inequality.

Several studies have investigated the relationship between taxation and income inequality. For instance, Adeyemi (2015) used a multiple regression model to examine the effect of tax revenue on income distribution in Nigeria. The study found that direct taxes (such as and petroleum profit tax) had a negative and significant effect on income inequality, while indirect taxes (such as VAT and customs duties) had a mixed impact. Similarly, Oluwaseun and Okon (2018) applied a similar model to assess the effect of taxes on poverty reduction, concluding that progressive taxation plays a crucial role in narrowing income disparities.

In summary, this study will use an empirical model that includes different taxes (VAT and PPT) to investigate their impact on income inequality in Nigeria. The study will employ econometric analysis techniques, such as Autoregressive Distributed Lag (ARDL) to estimate the model and determine the significance and direction of the relationship between taxes and income inequality in Nigeria.

4. DISCUSSION OF RESEARCH RESULTS

4.1 Descriptive Statistics

Descriptive statistics helps us to better understand the properties of time series data. It helps us to know if our data is normally distributed and it also helps us check for outliers within our dataset. This shows the measures of central tendency; mean, median, measures of dispersion; minimum, maximum, standard deviation; and measures of normality; skewness, kurtosis, and Jarque-Bera. The summary of the descriptive statistics is shown in table 4.1 below.

Table 4.1 summary of descriptive statistics

	GINI	PPT	VAT	EDU
Mean	39.99400	2006.696	808.4780	7.811200
Median	37.10000	2008.450	649.5000	7.200000
Maximum	69.00000	4209.017	3640.000	16.00000
Minimum	35.10000	164.2730	47.14000	4.300000
Std. Dev.	8.036048	1041.424	858.7386	2.648454
Skewness	2.580620	0.034604	1.828695	1.303701
Kurtosis	9.104679	2.258251	6.179841	5.072042
Jarque-Bera	66.56823	0.578105	24.46655	11.55406
Probability	0.000000	0.748973	0.000005	0.003098
Sum	999.8500	50167.40	20211.95	195.2800
Sum Sq. Dev.	1549.874	26029531	17698369	168.3435
Observations	25	25	25	25

Source Researcher's compilation using E-views12

On average, the GINI index across the 21 observations is 39.99, indicating a moderate level of income inequality. The median value is 37.10, meaning that half of the observations are below this level and half are above. The minimum GINI value recorded is 35.10, while the maximum is 69.00, showing that income inequality ranged between these two figures over the period.

The average petroleum profit tax (PPT) collected during the period is 2006.696, with a median value of 2008.450, suggesting that most values are slightly clustered around or above the average. The lowest PPT value observed is 164.2730, and the highest is 4,209.02, indicating a wide variation in petroleum tax revenue over the years.

The mean VAT revenue collected is 808.48, while the median is 649.00, implying that a few high values may have pulled the average up. The minimum VAT recorded is 47.14, and the maximum is 3,640.00, showing a significant range in VAT collections across the observations.

The average education expenditure is 7.81, with a median of 7.2, indicating that spending is generally consistent around this level. The lowest amount spent on education during the period is 4.30, while the highest is 16.00, demonstrating noticeable variation in education funding over time.

4.**1.2 Unit Root Test (stationarity Test)**

The Augmented Dickey-Fuller (ADF) unit root test was conducted to determine the stationarity of the variables and the result is shown below. The results reveal that VAT, GINI, PPT, and EDU are all stationary at level, indicating that they are integrated of order zero, I(0). Since all the variables are stationary at level, there is no need for a co-integration test or the use of the ARDL bounds testing approach, which is applicable when variables are of mixed integration orders (I(0) and I(1)).

Table 4.2: unit root test

Variables	ADF statistics	Critical value at 5% level of significance	Critical value at at 10% level of significance	Order of integration
Gini	-5.159823	-3.162199	-3.243079	1(0)
PPT	-3.137559	-2.991878	-2.635542	1(0)
VAT	7.344970	-3.162199	-3.243079	1(0)
EDU	-4.963754	-3.162199	-3.243079	1(0)

Source Researcher's compilation using E-views12

The Ordinary Least Squares (OLS) regression technique is adopted for the analysis, as it is suitable for estimating relationships among stationary variables and avoids the problem of spurious regression. The result of the ols estimation testing approach is shown in table 4.3

Table 4.3: OLS regression results

Variable	Coefficient	Std. Error	t-statistics	Prob.
Log (PPT)	-0.114521	0.030699	-3.730387	0.0012
Log (VAT)	-0.066464	0.024576	-2.704393	0.0012
Log (EDU)	-0.030227	0.078682	-0.384160	0.7047

Source; Researcher's compilation using E-views12 R-squared = 0.723994

Adjusted R-squared = 0.684564

F-statistics = 18.36175

Durbin Watson statistics = 1.417420

The purpose of this study, since the OLS technique was employed to obtain the estimates of the model, the test for the absence of autocorrelation is conducted using the Durbin – Watson statistics.

Results

According to the table 4.4 above the variables PPT and EDU a consistent with their prior expectation

except VAT. This implies that a unit change in petroleum profit tax PPT, value added tax VAT, and education expenditure EDU, will lead to a decrease in incoming equality measured with Gini coefficient

4.2.1 Economic Criterion (A prior Expectation)

The regression results obtained in this study are evaluated based on prior expectations. The sign and magnitude of each variable coefficient is evaluated against theoretical expectations.

Table 4.4: Summary of Economic a prior test

Dependent variable	Independent variables	Expected relationship	Observed relationship	Conclusion
Income inequality (GINI)	VAT	+	-	Do not conform
	PPT	-	-	Conform
	EDU	-	-	Conform

Source; Researcher's compilation using E-views12

4.2.2 Statistical criterion (first order test)

In order to check if statistical criterion was met, the adjusted R² and F-test will be applied here

The Adjusted coefficient of determination (Adjusted R²)

The adjusted r² which is more suitable for multiple regression analysis in table 4.6 has a value of 0.68 indicating that 68% of the total variation in the dependent variable (income inequality) is explained by the independent variables jointly.

F- Statistics

The F-test is useful in verifying the overall significance of an estimated model. Decision rule:

reject H0 if Fcal > Ftab(k-1, n-k-1) at 5% level of significance

Numerator (df_1) = k = 3 (number of independent variables)

Denominator (df_2) = n − k − 1 = 25 − 3 − 1 = 21

F-Distribution Table Lookup

We're looking for: $F_{0.05}$ (3, 21)

From the standard F-distribution table:

F-tab (3, 21) at 5% significance = 3.07

Therefore, since f-calculated (18.36175) is greater than f-tabulated (3.07) the study rejects Ho and accept H1 that the study has goodness of fit and is statistically different from zero. In other word there's a significant impact between dependent variable and independent variable is study.

4.2.3 Econometric criterion

In this subsection, the following econometrics tests are used to evaluate the result obtained from the study model; autocorrelation, multicollinearity and heteroscedasticity.

Test for Autocorrelation (DW)

To conduct a test for autocorrelation in the regression results, we use the Durbin-Watson test. The Durbin-Watson statistic is a commonly used measure to detect the presence of autocorrelation in the residuals of a regression model. Looking at the regression output in Appendix 7, we observe that the Durbin-Watson statistic value is reported as 1.417420 The Durbin-Watson statistic ranges from 0 to 4. This implies that there is positive autocorrelation.

Test for Multicollinearity

This test for the existence of a perfect, exact or linear relationship among some or all explanatory variable of a regression model. The basis for this test is the correlation matrix obtained using the series.

Decision rule: If the correlation coefficient is greater than 0.8, the study concludes that there is multicollinearity but if the coefficient is less than 0.8, there is no multicollinearity. The study therefore concludes that the explanatory variables do not have exact linear correlation.

Test for Heteroscedasticity

This test is conducted to see whether the error variance of each observation is constant or not. The study uses the Breusch-Pagan-Godfrey heteroscedasticity test. The hypothesis testing is thus:

H0: There is no heteroscedasticity in the residuals

H1: There is a heteroscedasticity in the residuals.

The decision rule is to accept the null hypothesis that there is homoscedasticity (that is, no heteroscedasticity) in the residuals if the probability of the calculated F-test statistic is greater than the 0.05 level of significance chosen in the study. Hence, P (F) 0.1375, This means that the probability F statistic is greater than 0.05 level of significance. Therefore, the study accepted the null hypothesis that the model has no heteroscedasticity in the residuals and therefore, the data is reliable for prediction.

4.3 Evaluation of Research Hypotheses

The t-test is used to know the statistical significance of the individual parameters. Two-tailed tests at 5% significance level are conducted. The result is shown on table 4.9 below. Here, the study compares the calculated t-statistic with the tabulated t-statistic

Significance level (α) = 0.05 (two-tailed test)

df = n − k − 1 = 25 − 3 − 1 = 21

t-tabulated value at 5% significance (two-tailed):

We look up: $t_{0.025}$ (two-tailed 5%) with df = 21 From the standard t-distribution table:

t-tab = 2.080

The study employs a 0.05 level of significance and in doing so, the decision rule is to reject the null hypothesis if the t-value is significant at chosen level of significance; otherwise, the null hypothesis will be accepted. This is summarized in table 4.9 below

Table 4.5: Summary of t-statistics

Variable	T calculated (T cal)	T tabulated (T tab)	Conclusion
PPT	-3.730387	2.080	Statistically significant

| VAT | -2.704393 | 2.080 | Statistically significant |
| EDU | -0.384160 | 2.080 | Statistically insignificant |

Source; Researcher's compilation using E-views12

Decision Rule:

If calculated t-value> tabulated t-value, we reject the null hypothesis and accept the alternative

Hypothesis 1

H₀: Value Added Tax (VAT) does not significantly affect income inequality in Nigeria.

H1: Value Added Tax (VAT) does significantly affect income inequality in Nigeria.

Decision:

Value added tax significantly affect the income inequality in Nigeria

Hypothesis 2

H₀: Petroleum profit Tax (PPT) does not significantly affect income inequality in Nigeria.

H1: Petroleum profit tax (PPT) does significantly affect income inequality in Nigeria.

Decision:

Petroleum profit tax (PPT) does significantly affect income inequality in Nigeria.

4.4 Discussion of findings

This study investigates the effect of taxes on income inequality in Nigeria over the period 1999–2023. The study employs the Ordinary Least Squares (OLS) regression technique after confirming that the variables are stationary at level. The OLS result yielded an R-squared value of 0.723994 and an adjusted R-squared of 0.684564, indicating that approximately 72% of the variations in income

inequality are explained by changes in tax policy variables used in the model. The F-statistic (18.36175) is statistically significant, confirming the overall fitness of the model, while the Durbin-Watson statistic (1.417420) shows a moderate level of autocorrelation.

The findings from the OLS regression analysis revealed that Value Added Tax (VAT) and Petroleum Profit Tax (PPT) have significant influences on income inequality in Nigeria.

The result indicates that Value Added Tax (VAT) has a negative and statistically significant relationship with income inequality. This implies that an increase in VAT revenue is associated with a reduction in income inequality. The implication is that VAT, as a broad-based consumption tax, could be redistributive when properly implemented and used to fund social spending and infrastructure that benefits lower-income groups.

Conversely, Petroleum Profit Tax (PPT) has a negative and significant impact on income inequality in Nigeria. The negative coefficient suggests that increases in PPT revenue are associated with a reduction in income inequality. This may indicate that petroleum tax revenue, when effectively mobilized, contributes to redistributive public spending such as infrastructure, education, or social programs. Despite past inefficiencies in the oil sector, this result implies that PPT still plays a progressive role in Nigeria's fiscal structure, potentially benefiting lower-income groups more when managed transparently.

Overall, the findings align with theoretical expectations and support the argument that tax policy can influence the distribution of income within an economy. The direction of impact of VAT and PPT

on income inequality reflect the complex nature of fiscal structures and revenue utilization in Nigeria.

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

This study set out to examine how taxes affect income inequality in Nigeria between 1999 and 2023. The findings confirm that different tax types have distinct impacts on income distribution.

Value Added Tax (VAT) showed a negative and significant relationship with income inequality. This indicates that when well-managed and fairly applied, VAT can help reduce inequality especially if the revenue is allocated to sectors that benefit the poor, such as healthcare, education, and infrastructure.

Petroleum Profit Tax (PPT) also had a negative and significant effect, suggesting that increases in petroleum tax revenue are associated with reduced income inequality. This implies that, despite concerns about mismanagement in the petroleum sector, PPT has the potential to support redistribution if the revenue is channeled effectively.

Overall, the study concludes that taxes are powerful tools for addressing income inequality in Nigeria. However, their success depends not only on efficient tax collection but also on how the revenue is spent. Transparent governance and targeted public investment are essential for ensuring that tax systems contribute meaningfully to equitable development.

5.3 Policy Recommendations

A major policy recommendation is that the Value Added Tax (VAT) system should be made more pro-poor by ensuring that essential goods such as food, medicine, and educational materials remain exempt or zero-rated. At the same time, VAT rates on luxury and non-essential items can be increased. This dual approach helps ensure that the tax burden does not fall disproportionately on low-income households. Furthermore, revenue generated from VAT should be transparently allocated to social welfare programs, education, and healthcare in order to further reduce inequality and improve living standards.

Also, there is a need to enhance the use of Petroleum Profit Tax (PPT) revenue by channeling a significant portion of it into social programs that directly benefit the poor. These may include investments in quality education, clean water, rural electrification, and job training. Proper allocation of petroleum tax revenue can help translate natural resource wealth into inclusive development outcomes. government should enhance efficiency in PPT collection and minimize revenue leakages by closing loopholes and improving the monitoring of petroleum companies. In addition, proceeds from Petroleum Profit Tax should be directed towards infrastructural development and poverty alleviation projects, particularly in oil-producing and marginalized regions, to ensure equitable distribution of oil wealth.

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