



Impact of Taxation on Poverty in Nigeria: 1990-2022

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Abstract

The National Bureau of Statistics 2022 Multidimensional Poverty Index Survey indicates that 133 million Nigerians are multidimensionally poor, indicating that poverty is still a major issue in the country. Unfortunately, Nigeria's fiscal position is susceptible to shocks due to its low revenue-to-GDP ratio, which makes it difficult to mobilize domestic money to fund public expenditures that could combat poverty in the country. Given the inadequate domestic revenue mobilisation efforts in the country, indirect taxes like VAT and customs and excise duty would be preferred over direct taxes in generating revenue in Nigeria. Thus, the paper empirically examined the impact of taxation on poverty in Nigeria focusing on indirect taxes like Value Added Tax and Custom and Excise Duties from 1994 to 2022 using the Dynamic Ordinary Least Squares. The World Development Indicators, the National Bureau of Statistics, and the Central Bank of Nigeria's statistical bulletin provided the secondary data used in this paper. Based on the predicted DOLS regression result, indirect taxes such as Value Added Tax (VAT) and Customs and Excise Duties (CED) are the main long-term drivers of poverty. The paper's findings also align with theoretical predictions, which state that the government should not impose taxes at a rate that would be detrimental to taxpayers. As a result, a higher compliance rate will result in significant revenue for the government. Therefore, the paper recommended the Federal government use VAT and Customs and Excise Duties for revenue mobilization without making the situation of the nation's impoverished people worse through the Federal Inland Revenue Services and Nigeria Customs Service.

Keywords: Taxation, Poverty, Income, DOLS and Nigeria

JEL Codes: H2, I30, N3, C30 and N47

I. Introduction

Poverty is deprivation of opportunities and choices, defilement of human self-respect. It

indicates a lack of the fundamental skills necessary to contribute to society effectively. It means not having enough money to support a family, not having a hospital or school nearby, not being able to get credit, and not owning land where one could grow food or work to support themselves. It symbolizes vulnerability, powerlessness, and the exclusion of individuals, families, and communities. It usually meant living in precarious or marginal environments without access to clean water and sanitary facilities, making one vulnerable to assault (UNDP, 2009).

In Nigeria, poverty is still a major issue. It increased from 28.1% in 1980 to 66.9% in 1996, then dropped to 54.4% in 2004 and reached a top of 69% in 2010. In addition, the number of individuals living in poverty increased from 18.1 million in 1980 to 112.5 million in 2010. The projected poverty incidence in 2004 was 54.4 percent, however it might still be regarded as high. The decline gives an annual average of 1.6 percentage points since 1997 Aigbokhan, (2008). While 82.9 million people in Nigeria, or 40% of the country's population, live below or below the poverty level as of 2018, according to data from the 2018–19 household survey conducted by the National Bureau of Statistics. According to the most recent data from the National Bureau of Statistics (NBS) 2022 Multidimensional Poverty Index (MPI) Survey, 133 million Nigerians, or 63% of the country's population, live in multidimensional poverty. It follows that under national standards, those residing in homes with yearly per capita consumption expenditures less than this are deemed impoverished. Nonetheless, the paper is certain that, without compromising the welfare of the populace, pursuing an aggressive domestic revenue mobilization strategy through taxation is one of the best strategies to pull the nation out of its current extreme poverty.

Nigeria's domestic income mobilization is still insufficient to pay for public initiatives that could combat poverty. Nigeria has one of the lowest revenue-to-GDP ratios in the world, according to



IMF (2023), which leaves its fiscal position open to shocks. For instance, Nigeria tax-to-GDP ratio stood at 15.28% in 2010 and increased marginally to 19.98% in 2011 before failing to 9.78 % in 2015. Nigeria tax-to-GDP ratio further decrease to 8.28% in 2016 before to 9.02% in 2017. In 2018, the tax-to-GDP ratio in Nigeria increased by 1.34 percentage points, from 9.02% to 10.36%. At the end of 2021, the tax-to-GDP ratio stood at 10.86% for Nigeria compared to an estimated 8.40% in 2020. The highest tax-to-GDP ratio reported for Nigeria since 2010 was 19.98% in 2011, with the lowest being 8.28% in 2016 (National Bureau of Statistics, 2023). This implies that in order to lower the rate of poverty in the nation, governments at all levels in Nigeria should increase their efforts to mobilize domestic revenue through taxes to pay for social services and public capital projects.

Sadly, the Nigerian government faces a lot of difficulties when it comes to raising domestic income. These difficulties include low tax revenue, which is mostly caused by the limited bases of the country's indirect taxes, low tax compliance, a high number of tax exemptions, and low tax rates. Tax holidays, large allowances, and exemptions provide additional obstacles to Nigeria's domestic revenue mobilization efforts, as they have undermined the country's revenue base (IMF, 2023). Indirect taxes, such as VAT and excise duty, would be more desirable than direct taxes in Nigeria in order to raise income in light of these difficulties.

The majority of empirical research on how taxes affect the poverty rate has been done in different regions and across national borders using panel data analysis (Adukonu & Abebrese, 2016; Ahmad & Awan, 2021; Goderis & Vlekke, 2023; Yaru & Ohiaka, 2022; Maina, 2017; Markina, 2022). To the best of our knowledge, there are very few empirical studies that are country-specific and rely on time series data analysis. The only study that closely resembled ours was Usman and Idoko's (2021) analysis of the use of direct and indirect taxes, such as VAT, Petroleum Profit Tax (PPT), Company Income Tax (CIT), Personal Income Tax, and Custom/Excise Duty (CED), as a means of reducing poverty in Nigeria from 1990 to 2019. The current study, however, concentrated on indirect taxes, such as excise duty and VAT, as part of domestic revenue mobilization initiatives to finance social services and public capital projects to lower the rate of poverty in Nigeria. With an emphasis on indirect taxes including value-added tax and customs and excise duties, this paper attempts to close this gap by empirically examining the impact

of indirect taxes on the level of poverty in Nigeria from 1994 to 2022.

II. Literature Review

Conceptual Review

Poverty

Since poverty is a complicated, multifaceted, and global socioeconomic issue, it is challenging to define. While certain definitions of poverty have been proposed, few coherent approaches to the term have been successful in capturing its essence. Ahmad and Awan (2021) define poverty as having an income from employment that is so low as to make it impossible for a person to meet their fundamental necessities. Families and individuals suffering from poverty now lack access to clean water, sanitary toilets, wholesome food, and other necessities of life. Every country may have a different cut-off point for the proportion of its population living in poverty. They also lack sufficient funds to meet their fundamental needs. Therefore, the state of being impoverished is known as poverty. It is present in nations when the populace cannot meet their basic demands in order to survive.

UNDP (2009), however, views poverty as a taint to human self-respect and a denial of possibilities and choices. It indicates a lack of the fundamental skills necessary to effectively engage in society. It means not having enough money to support a family, not having a hospital or school nearby, not being able to get credit, and not owning land where one could grow food or work to support themselves. It symbolizes vulnerability, powerlessness, and the exclusion of individuals, families, and communities. It usually meant living in precarious or marginal environments without access to clean water and sanitary facilities, making one vulnerable to assault.

There are many different kinds of poverty, including situational, generational, absolute, relative, urban, rural, and so forth, but two are thought to be the most significant. One is Relative Poverty, which arises when an individual's income falls short of the average income required to sustain the average standard of life in the community by a specific amount. The government establishes this lowest level. The second type of poverty is absolute poverty, which is defined as having less income than what is required to maintain a minimal quality of life, which includes having enough cash to pay for needs like food, water, clothing, shelter, healthcare, education, and so on.



Taxation

The government imposing mandatory fees on people or organizations is known as taxation. Almost all nations in the world levy taxes. Taxes are the primary source of government revenue in contemporary economy. In essence, there are two categories of taxes: indirect taxes and direct taxes. The taxes that citizens pay directly to the government are known as direct taxes. It is directly applied by the government to people and organizations (Ahmad & Awan, 2021). Examples of direct taxes include income taxes, wealth taxes, corporate taxes, gift taxes, capital gains taxes, and expenditure taxes. An indirect tax is one in which the subject of the taxes does not have the same incidence and consequences. The taxpayer has the option to transfer the tax burden to another party. These are used in the production or marketing of products and services. Indirect taxes include things like sales tax, excise tax, VAT, service tax, custom duty tax, entertainment tax, and so on (Ahmad & Awan, 2021).

Furthermore, in light of Eiya (2012), taxation is a mandatory levy that the government imposes in order to raise money on the income, profits, and capital gains of individuals, organizations, and other lawful entities. According to Bhartia (2009), the main goals of taxation are to generate money for government expenditures, income redistribution, and economic management in a nation. However, the main purpose of taxation is to fund government spending and fairly distribute revenue, which contributes to a nation's economic development and progress.

Theoretical Review

The Savers-Spenders Theory of Fiscal Policy

Mankiw (2000) established Savers-Spender's theory of fiscal policy. The contradictions found by Diamond-Samuelson (1965) in the theory of overlapping generation and Barro-Ramsey (1974) in his idea of infinitely-lived families led to the development of this theory. The new hypothesis created to describe the behavior of fiscal policy in the economy is called Savers-Spender's theory. The first idea concerns the significant impact that short-term tax adjustments will have on the demand for products and services. According to this proposal, spenders' increased take-home pay will be lessened by either fewer tax refunds or greater tax payments. It is implied that customers should save the additional take-home pay to cover the increased tax bill since they should understand that their lifetime resources remained same.

Expediency Theory of Poverty

Bhartia was the one who first proposed the expediency theory (2009). Every proposed tax policy should pass the practicability test, which is the foundation of the idea. It explains the effectiveness, economy, and efficiency of the tax collection tool. Its compelling argument is that the tax rate that the government sets should not negatively impact taxpayers, as doing so will increase compliance and bring in large sums of money for the government. Chigbu *et al* (2011) state that this theory views taxes as a potent tool for policy that should be used to address macroeconomic and social problems in the state or society, such as income inequality, regional differences, mobilizing unemployment revenue, and reducing poverty. According to this taxation theory, taxes are related to governmental activities and their imposition is crucial for funding those activities as well as serving as a foundation for dividing up the tax burden among society's members. Under the theory, taxes can be levied based on the need to raise income because the government is necessary for the state, and revenue is necessary for the government.

Empirical Review

Ghana's tax systems' asymmetrical effects on poverty and inequality are examined by Frank-Adu *et al* (2023). The study makes use of time-series data spanning 1983 to 2016 using the Nonlinear Autoregressive Distributed Lag (NARDL) estimate method. The results showed that although there is an asymmetric association between tax systems and poverty, there is a symmetric relationship between tax systems and inequality. In particular, the study found that whereas shocks to direct taxes can be positive or negative, increasing or decreasing the degree of poverty, shocks to indirect taxes and the entire tax system had the opposite effect. Furthermore, a positive correlation between indirect taxes and inequality over the long term is the only instance of symmetric evidence. The report suggested a strategy for reducing poverty that is based on cutting taxes at all levels.

Goderis and Vlekke (2023) estimated the impact of four major reforms and a variety of tax-benefit schemes on poverty in the Netherlands using two microsimulation models. The study also records the consequences of these policies and reforms on employment, income inequality, and the government budget in order to determine the costs of implementing them. The findings show that although poverty can be reduced, it will cost a significant amount of money from the government and/or jobs. A universal basic income that is budget-



neutral and equal to the state pension decreases poverty by 60%, but it also necessitates extremely high income tax rates and causes an 8% decline in employment. These results highlight the social trilemma that contemporary welfare state policymakers must navigate in order to retain sufficient financial incentives for individuals to obtain employment, provide adequate minimum income support, and control government spending. The weak pay growth at the bottom of the earnings distribution has made this more challenging.

Using panel data regression analysis, Yaru and Ohiaka (2022) investigate the relationship between poverty and revenue mobilization from indirect taxes for 29 chosen Sub-Saharan African (SSA) nations between 1990 and 2020. In all estimated models, GDP per capita has a negative and significant impact on poverty in Sub-Saharan Africa, according to the panel regression estimates derived from the random effects model (REM). In only one of the six models were the effects of import and customs tariffs, as well as domestic goods and services taxes, significant but negative. According to the study's findings, governments in SSA may be able to increase revenue through the employment of domestic goods and services taxes, customs and import levies, and other fiscal policy tools without necessarily making the poverty situation worse.

Markina (2022) evaluates the effect of taxes on inequality and poverty in Ukraine and offers suggestions for the use of taxes to address these issues. The study's approach is based on a combination of commitment to equity (CEQ) and linear regression. Lustig created CEQ to examine how taxes and social spending affect poverty and inequality in different nations. The analysis demonstrates that Ukraine's income tax reform should focus on transferring taxes from the rich to the poor and deterring aggressive tax planning, rather than altering tax rates and tax periods. Furthermore, the analysis's findings indicate that poverty may be exacerbated by the Ukrainian government's reduction of free health and education services if redistributive measures are not changed.

Ikechukwu *et al* (2021) used corporation income tax, personal income tax, petroleum profit tax, and education tax as direct tax variables from 1990 to 2019 to examine the effects of direct taxes on income redistribution in Nigeria. The Federal Inland Revenue Service (FIRS) and the Central Bank of Nigeria Statistical Bulletin provided the annualized data set that was used in the study. The data was analyzed using Fully Modified Least Squares (FMOLS). The study's empirical findings showed that, in the Nigerian context, personal

income tax and petroleum profit tax had a considerable positive impact on income redistribution, while company income tax and education tax had a negligible negative impact. These findings helped to reduce income inequality. In order to improve the general wellbeing of the populace, the study suggested that tax revenue be wisely allocated by the government to the construction of high-quality infrastructure, such as schools, railroads, healthcare facilities, and other commercial establishments throughout the states. The idea behind this recommendation is to help reduce the disparity in income between the nation's wealthiest and least fortunate citizens.

Usman and Idoko (2021) investigated how well taxes worked in Nigeria between 1990 and 2019 to reduce poverty. The parameters were estimated by using the Auto-Regressive Distributed Lag Model. Poverty Level (POV) was regressed on Value Added Tax (VAT), Petroleum Profit Tax (PPT), Company Income Tax (CIT), Personal Income Tax, and Custom/Excise Duty (CED). According to their respective probability values at the 5% level of significance in the short run, the regression's result reveals that PPT, CIT, and VAT have positive and significant relationships with poverty level, while CED and PIT have negative and significant relationships. Long-term variable analysis showed that poverty and PPT, CIT, and VAT had a positive but insignificant connection, while poverty and CED had a negative but insignificant relationship. As a result, the study comes to the conclusion that taxation as a revenue source is ineffective in reducing poverty in the nation. The study suggests that in order to reduce poverty, the government should slash PPT, CIT, and VAT based on these findings.

Using factors including GDP, population, per capita income, and inflation, Ahmad and Awan (2021) investigate how taxes affect poverty in Pakistan. For the years 1998 through 2018, time series data were analyzed using correlation and regression approaches. The findings showed that taxes and poverty have a favorable relationship. Multiple regression analysis demonstrated that while population and per capita income had a positive effect on poverty, taxes, inflation, and GDP had a negative impact. From a taxation perspective, this report suggests that the government examine the tax system in order to address Pakistan's rates of investment, savings, unemployment, and poverty.

Sessu (2019) investigates how tax income affects foreign debt and Indonesian investment trends between 2002 and 2017. The results of multiple regression analysis demonstrate that tax



receipts and investment developments have not been able to lower poverty levels, because with high tax revenues emanating from high individual and corporation taxes might alter the level of prices. Poverty levels can be lowered by foreign debt since increased foreign debt stimulates development initiatives that can employ labor and lower unemployment and poverty rates. The findings of this study clarify the significance of government policies that consistently stifle imports and foreign labor while also raising the caliber of human resources, including their character and competencies.

Value Added Tax (VAT) and poverty in Sri Lanka are examined by Deysappriya (2018), who takes into account the household's VAT payment on food consumption. Empirical estimation was conducted using the Ordered Probit model and data from Sri Lanka's 2012–2013 Household Income and Expenditure Survey (HIES). The findings demonstrate that, although value-added tax (VAT) makes a substantial contribution to the nation's tax revenue, it actually raises the likelihood of being extremely poor, poor, or vulnerable non-poor by 0.0061%, 0.4942%, and 1.4760%, respectively, while decreasing the likelihood of not being poor by 1.9764%. In order to reduce the VAT burden on lower income groups while ensuring higher tax revenue for the government, the study advises rationalizing and maintaining VAT exemptions, introducing a twin VAT rate for necessities and luxury goods and services, and gradually switching from indirect to direct taxes.

Maina (2017) examines the usage of consumption taxes in Kenya to fight poverty and advance income equality. The study used Ordinary Least Squares to estimate the models. The first aims to illustrate how consumption affects income inequality, while the second shows how consumption taxes impact welfare by affecting GDP per person. The results verify that consumption taxes have a regressive effect. GDP per capita and consumption tax have a positive relationship. The study suggests using differential rates sparingly. The differentiated rate ought to be aimed squarely at the impoverished; reduced rates should be imposed on necessities, which account for a larger portion of the impoverished's income than that of the rich.

Using data from the National Household Survey on Incomes and Expenditures 2012–2013, Rossignolo (2017) uses basic fiscal incidence analysis to evaluate the impact of tax and expenditure policies on income distribution and poverty in Argentina. The findings demonstrate the effectiveness of fiscal policy in combating poverty

and inequality, but they also raise concerns about the programs' sustainability given the extraordinarily high levels of public spending. Simulated effects of various government policy initiatives have also been conducted. The report suggested that programs like Asignación Universal por Hijo and Moratoria Previsional, which aim to reduce poverty, be sustained.

From 1981 to 2014, Obaretin *et al* (2017) studied how taxes affected the redistribution of income in Nigeria. Secondary data from the World Bank Data Bank and the Federal Inland Revenue Service were used in the study. The statistical approach known as Ordinary Least Squares was employed to analyze the collected time series data. According to study results, all tax variations had no discernible effect on income inequality as measured by the GINI at the 5% level. Accordingly, the study comes to the conclusion that taxes in Nigeria is unable to fulfill its function as a common instrument of income redistribution. Due to taxes' negligible impact on the degree of income inequality as determined by the Gini coefficient, the study advocated for the efficient and fair use of tax resources.

The impact of Ghana's tax laws on poverty is examined by Adukonu and Ofori-Abebrese (2016). The research utilized annual time series data spanning from 1984 to 2013 and applied the Johansen cointegration estimation techniques. The findings demonstrate that Ghana's poverty rate is worsened by increased indirect tax policy. Remittances and direct tax laws, however, have a moderating effect on poverty. Lowering export taxes will encourage activity in the export subsector given the rural nature of the economy.

Jellema *et al* (2016) examine the redistributive effectiveness and effects of Uganda's revenue collection tools and social spending programs on poverty and inequality using data from the 2012–13 Uganda National Household Survey. In Uganda, fiscal policy—which includes many of its component tax and expenditure elements—is lowering inequality, although its effect is not very strong. Because of Uganda's relatively low spending levels, the country's fiscal strategy has reduced inequality less than other nations with comparable levels of beginning inequality. Although the combination of almost full coverage of indirect tax instruments and very limited coverage of direct transfer programs means that many impoverished households are net payers into the fiscal system rather than net recipients from it, the effect of fiscal policy on poverty is little. Uganda should be careful to shield the poorest households from more



destitution caused by the fiscal system as it prepares for higher tax receipts and parallel investments in productive infrastructure.

Voto (2012) examines the impact of direct and indirect taxes on poverty in emerging nations by utilizing yearly panel data spanning 37 developing nations from 1995 to 2016. The study utilized a variety of statistical techniques, including panel cointegration, the Dumitrescu-Hurlin causality test, Fully Modified Ordinary Least Squares (FMOLS) and DOLS, the Pooled Mean Group (PMG), and the direction of the causal effects among the variables, to evaluate the short- and long-term effects of direct and indirect taxes on poverty. According to the FMOLS and DOLS data, the only factors that significantly and negatively contribute to long-term poverty in developing nations are business taxes and taxes on goods and services. The results of the Dumitrescu-Hurlin causality test show that corporate taxes are a cause of poverty, while taxes on goods and services are a cause of poverty and vice versa. Finally, the PMG shows that, with an error correction term of 0.059, the short-run association implies that the link is statistically negligible, even if the long-run estimates reveal a negative and substantial relation among our variables in developing economies. Overall, the results lend credence to the claim that corporate income taxes and taxes on goods and services work together to significantly lower poverty over time in emerging nations. As a result, the policy advice from this is that the tax and transfer systems be set up so that the income from transfers is more than the taxes that the impoverished pay.

III. Methodology

Research Design

The ex-post facto design is the chosen research design for this paper. The incapacity of the researcher to alter the data being studied is what distinguishes this method. The ex-post facto, also known as "causal comparative research," was defined by Kerlinger (1973) and refers to the process of determining possible cause-and-effect links between independent and dependent variables. The principal aim is to definitively establish a causal relationship between them. This approach was chosen for the current investigation due to its relevance, particularly in identifying these correlations.

Theoretical Framework

The theoretical framework adopted for this paper was derived from the Expediency Theory propounded by Bhartia (2009). Every proposed tax

policy should pass the practicability test, which is the foundation of the idea. It explains the effectiveness, economy, and efficiency of the tax collection tool. Its compelling argument is that the tax rate that the government sets should not negatively impact taxpayers, as doing so will increase compliance and bring in large sums of money for the government. Chigbu *et al* (2011) state that this theory views taxes as a potent tool for policy that should be used to address macroeconomic and social problems in the state or society, such as income inequality, regional differences, mobilizing unemployment revenue, and reducing poverty. According to this taxation theory, taxes are related to governmental activities and their imposition is crucial for funding those activities as well as serving as a foundation for dividing up the tax burden among society's members. Under the theory, taxes can be levied based on the need to raise income because the government is necessary for the state, and revenue is necessary for the government.

Model Specification

Based on the theoretical framework and a modified the framework of Ahmad and Awan (2021) who examines the impact of taxation on poverty in Pakistan using variables like total tax to GDP ratio, head count index (as a measure of poverty), inflation, GDP, population and per capita income. However, the paper modified Ahmad and Awan (2021) model by including indirect taxes like Value Added Tax (VAT) and Customs and Excise Duties (CED) in order to comprehend the connection between poverty and taxation in Nigeria. Thus, the modified model is presented as follows:

$$Pov_t = \lambda_0 + \lambda_1 VAT_t + \lambda_2 CED_t + \varepsilon_t$$

(3.1)

Where, POV represents poverty level, VAT is value added tax, CED is custom and excise duties, λ_0 = The intercept or autonomous parameter estimate, λ_1 to λ_2 = Parameter estimate representing the coefficient of VAT, CED, respectively, and ε_t - other variables not explicitly included in the model.

Nature and Sources of Data

Time series secondary data from the World Development Indicators, the National Bureau of Statistics, and the Central Bank of Nigeria's statistical bulletin were used in the paper.

Variables Description and Measurements

Table 1 gives specific summary of variables description, measurements and source of data.



Table 3.2: Variables Description and Measurements

Variables	Description and Measurement	Sources
Poverty Level	Measured as poverty headcount at \$1.90 a day	WDI
VAT	This is a consumable levy imposed on goods whenever value is added at each stage of the supply chain.	NBS
Customs & Excise Duties	These are charges placed on goods imported to the country.	CBN

Source: Researchers' Computation, 2024

Notes: CBN: Central Bank of Nigeria Statistical Bulletin; NBS: National Bureau of Statistics; WDI: World Development Indicators for Nigeria.

Method of Data Analysis

The paper used the Dynamic Ordinary Least Squares to examine the impact of taxation on poverty reduction in Nigeria with special focus on indirect taxes. Thus, building equations (2) into the DOLS model, we have:

$$Pov_t = \lambda_0 + \lambda_1 VAT_t + \lambda_2 CED_t + \sum_{i=1}^n \Delta \lambda_1 VAT_{t-i} + \sum_{i=1}^n \Delta \lambda_2 CED_{t-i} + \varepsilon_t \quad (3.2)$$

Equation (3.2) represents the long-run relationship between Pov and the explanatory variables using the DOLS methodology. The coefficients $\lambda_1 - \lambda_2$ will give insights into how each of the explanatory variables impacts poverty in Nigeria.

The DOLS approach is justified by its ability to resolve endogeneity issues and do away with serial correlation, which is a drawback of conventional Ordinary Least Squares (OLS). The endogeneity issue is resolved and small sample bias is removed by the DOLS. Whether the variables under investigation are integrated of order one, I(1), mixed, or even fractionally integrated, the DOLS can be used. In contrast to some econometric methods that require time series variables to be integrated of order one, or I(1). Without making any assumptions about the integration characteristics of the series being studied beforehand, the DOLS enables thorough

analysis. Because of its adaptability, the DOLS is a better option, particularly when examining the connection between taxation and poverty in Nigeria.

IV. Results and Discussions

Descriptive Statistics

Table 1 presents the descriptive statistics for poverty rate (POV), Value added tax (VAT) and Custom and excise duties (CED). The two explanatory variables are all denominated in Naira Billion.

Table 1: Descriptive Statistics

	POV	VAT	CED
Mean	53.95103	3506.588	6153.682
Std. Dev.	7.615619	8962.233	16505.10
Skewness	-0.154616	2.702296	2.644445
Kurtosis	2.270280	8.757355	8.542015
Jarque-Bera	0.758974	75.34776	70.91260
Probability	0.684212	0.000000	0.000000
Observations	29	29	29

Source: Authors Computation, 2024 (Eviews-12)

According to Table 1's descriptive statistics, the approximate average of the poverty rate (POV) is 53.95 percent, with a matching standard deviation of 7.62 percent. This is indicative of the nation's high prevalence of

poverty. Similarly, the value added tax, or VAT, has a standard deviation of ₦8962.2 billion and an approximate average of ₦3506.6 billion. The approximate average of customs and excise duties (CED) is ₦6153.7 billion, with a corresponding



standard deviation of ₦16505.1 billion. The skewness test, however, revealed a combination of positive and negative slopes. This negate the principle of consistency of result. Additionally, as the p-values for the VAT and CED variables were less than 5%, the probability of Jarque-Bera statistics suggests a possible departure from a normal distribution.

Unit Root Test

If there were non-stationary variables, the DOLS estimation results could be erroneous. To determine

whether the data were stationar, the unit root test of stationarity was applied for each variable using the Augmented Dickey-Fuller (ADF) specification. In order to ascertain the stationarity of the series, a crucial stage in time series analysis is the Augmented Dickey-Fuller (ADF) unit root test, whose findings are shown in Table 2. For modeling and forecasting, it is essential that statistical features like variance and mean be constant across time. This is known as stationarity.

Table 2: Unit Root Test Result

Variable	ADF Test Statistics		
	ADF	Critical Value	Order of Integration
POV	-4.883936	-4.339330*	I(1)
VAT	-5.108308	-4.339330*	I(1)
CED	-5.251249	-4.339330*	I(1)

Note: *, significant at 1%,

Source: Authors Computation, 2024 (Eviews-12)

The ADF test statistic for the variable POV in Table 2 is -4.883936, indicating a higher degree of rejection than the critical value at the 1% significance level (-4.339330*). This implies that POV is integrated of order one, I(1), since it is stationary following initial differencing. Similarly, the Value Added Tax (VAT) has an ADF test statistic of -5.108308. This value is far more negative than the critical value at the 1% significance level (-4.339330*), indicating strong evidence against the presence of a unit root. Therefore, VAT is also stationary at first difference, I(1). For the Customs and Excise Duties (CED), the ADF test statistic is -5.251249, surpassing the critical value at the 1% significance level (-4.339330*). Thus, CED is stationary at first difference, I(1).

All three variables (POV, VAT, and CED) are integrated of order one, or I(1), according to the

results of the stationarity test in Table 2, indicating that each of them becomes stable after taking its first differences. This suggests that the non-stationarity in these variables will need to be addressed in any modeling or forecasting that involves them, usually using methods like differencing or cointegration.

Cointegration Test

To determine whether the relevant variables have a long-term relationship, the unit root test is utilized after that. Consequently, the Engle and Granger (Residual Based) Cointegration Test findings are displayed in Table 3. Co-integration makes sure that even non-stationary individual series can have stationary linear combinations, indicating a constant long-term association between them.

Table 3: Results of Engle and Granger (Residual Based) Cointegration Test

Variable	ADF Test Statistic	Critical ADF Value	At level (Prob)	Remarks
Residual	-3.216500	-2.650145*	0.00	Co-integrated

Note: * significant at 1%

Source: Authors Computation, 2024 (Eviews-12)

The ADF Test Statistic for the residuals in "Table 3: Results of Engle and Granger Residual Based Cointegration Test" is -3.216500, exceeding the critical value at the 1% significance level of -2.650145, suggesting co-integration. This is highly significant because it indicates that taxes and poverty in Nigeria have an equilibrium relationship over the long run. The estimation of DOLS regression was then carried out.



DOLS Regression Results

Table 4 displays the Dynamic Least Squares (DOLS) outcome. During the study period, the country's poverty level was directly influenced by some indirect taxes, as revealed by the Dynamic Least Squares finding.

Table 4: Dynamic Least Squares (DOLS) Result
Dependent Variable: RGDP (%)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VAT	-0.005085	0.013511	-0.376330	0.7138
CED	-0.009116	0.024466	-0.372581	0.7165
C	61.56909	4.730449	13.01549	0.0000
R-squared	0.666543			
Adjusted R-squared	0.552772			
Long-run variance	36.88145			

Source: Authors Computation, 2024 (Eviews-12)

The results of the estimated DOLS regression demonstrated that indirect taxes such as Value Added Tax (VAT) and Customs and Excise Duties (CED) are major long-term causes of poverty. The results presented in the paper thus align with theoretical assumptions that the government should not impose tax rates that are detrimental to taxpayers, as doing so would increase compliance rates and bring in significant money for the government. The goodness of fit of the DOLS estimate is acceptable. The regressors explain roughly 67% of the variation in the poverty line. The two indirect tax variants, VAT and CED, have the following coefficients and p-values when examining the performance of the individual variable coefficients: $-0.051\{0.71\}$ and $-0.091\{0.72\}$, respectively. According to the estimations, every indirect tax variation is correctly signed and consistent with the a priori expectation.

Post-Estimation Test Results

To determine the suitability and stability of the model as well as the reliability of the findings, the paper carried out some diagnostic tests. Table 5 results showed that the model did not exhibit serial correlation or heteroskedasticity during the study period. The residuals are homoscedastic according to the heteroscedasticity tests. The data appears to be reasonably well behaved, according on the findings of the diagnostic tests for heteroscedasticity and serial correlation. Additionally, during the study period, the normality test's p-value exceeds 0.05, suggesting that the residues are normally distributed. The residuals are therefore uniformly distributed. Therefore, the null hypothesis of a normal distribution was not rejected.

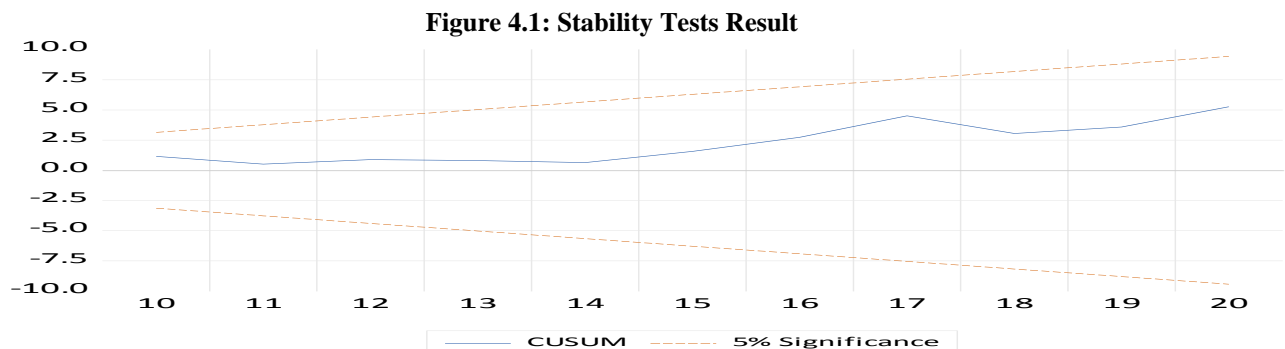
Table 5: Diagnostic Test Results

Test	Null Hypothesis	T-Statistic	Prob
Jarque-Bera	There is a normal distribution	0.261	0.88
Breusch-Godfrey LM	No serial correlation	0.471	0.64
Heteroskedasticity: Breusch-Pagan-Godfrey	No conditional heteroscedasticity	0.267	0.98

Source: Researcher's Computations based on E-Views 12

Stability Test Result

The stability test in Figure 4.1 revealed that the poverty model is stable during the study period as the plots of the charts lie within the critical bounds at 5% significant level.



Source: Researcher's Plot using E-Views 12

V. Discussion of Findings

The paper began with an initial examination of the data using descriptive statistics and an Augmented Dickey-Fuller stationarity test (ADF). According to the descriptive statistics, there is a high prevalence of poverty in the nation, with an average poverty rate of 53.95 percent and a standard deviation of 7.62 percent. According to the results of the unit root test, the variables were stationary following the initial differencing and were therefore integrated of order one, or I(1).

The existence of a long-run cointegration relationship between Nigeria's poverty level and indirect taxes was then ascertained using the Engle and Granger (residual-based) Cointegration Test. Based on the Engle and Granger Residual Based Cointegration Test findings, co-integration is indicated by the residuals' ADF Test Statistic of -3.216500, which is more than the crucial value at the 1% significance level of -2.650145. At the 5% significance level, the null hypothesis—that there is no long-term relationship—is thus rejected. Thus, the conclusion that the variables are cointegrated can be drawn.

The paper then used the Dynamic Least Squares method to examine the relationship between taxation and poverty in Nigeria (DOLS). Value Added Tax (VAT) and Customs and Excise Duties (CED) are two examples of indirect taxes that are important variables in determining poverty throughout the study period, according to the projected DOLS regression result. Also, the two explanatory variables are correctly signed and in conformity with theoretical expectations. Additionally, the results align with earlier research. For example, Yaru and Ohiaka (2022) examined 29 nations in Sub-Saharan Africa (SSA) and discovered a negative and significant correlation between import tariffs and customs and poverty. However, the paper findings are inconsistent with Ahmad and Awan (2021) and Deyshappriya (2018)

who found that indirect tax policies have positive impact on poverty level in Pakistan and Sri Lanka respectively. Also, the paper findings are inconsistent with Adukonu & Abebrese (2016) who found that indirect tax policies have positive impact on poverty level in Ghana in the short run.

More precisely, over time, a one-unit increase in value added tax lowers the poverty rate by 0.051. This could imply that cash transfers to improve the living conditions of the impoverished are made possible by the utilization of VAT tax revenue raised through redistribution policies. This outcome is comparable to that of Yaru and Ohiaka (2022), who found that domestic goods and services taxes, as well as customs and import charges, had a negative but significant influence on poverty in 29 chosen Sub-Saharan African nations. This finding, however, runs counter to the findings of a study by Deyshappriya (2018), who claimed that in Sri Lanka, VAT raises the likelihood of being extremely poor, poor, or vulnerable non-poor by 0.0061%.

In a similar vein, the poverty rate in Nigeria is found to be adversely impacted by Customs and Excise Duties (CED). This is consistent with theoretical predictions since it is anticipated that higher Customs and Excise Duties (CED) will lower Nigeria's poverty rate. Consequently, a one-unit increase in customs and excise duties will, over time, result in a 0.091-unit decrease in the poverty rate. This result is in line with the research by Usman and Idoko (2021), which found that between 1990 and 2019, customs and excise duties had a negative and negligible impact on poverty in Nigeria. This result, however, differs from that of Adukonu and Ofori-Abebrese (2016), who claimed that higher indirect tax laws exacerbated Ghana's poverty rate.



VI. Conclusion and Recommendations

The paper used data from 1994 to 2022 to investigate the impact of taxation on the level of poverty in Nigeria from 1994 to 2022, with a particular emphasis on indirect taxes such as value-added tax and customs and excise duties. Utilizing Dynamic Ordinary Least Squares, the paper relied on secondary data obtained from the World Bank, the Nigerian Central Bank, and the National Bureau of Statistics. Based on the predicted DOLS regression result, indirect taxes such as Value Added Tax (VAT) and Customs and Excise Duties (CED) are the main long-term drivers of poverty. Therefore, the paper's findings align with theoretical predictions that the government should not impose taxes at a rate that would be detrimental to taxpayers. As a result, a higher compliance rate would result in significant revenue for the government. The two indirect tax forms, VAT and CED, have the following coefficients and p-values when examining the performance of the individual variable coefficients: $-0.051\{0.71\}$ and $-0.091\{0.72\}$, respectively. Following the estimations, every indirect tax variation is correctly signed and consistent with the apriori expectation. It follows that taxes raised from VAT and Customs and Excise Duties have an impact on the living standards of the impoverished using cash transfers and redistribution policies. Therefore, the paper recommended the Federal government use VAT and Customs and Excise Duties for revenue mobilization without making the situation of the nation's impoverished people worse through the Federal Inland Revenue Services and Nigeria Customs Service.

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