

THE REGRESSIVE STRAIN OF VALUE ADDED TAX ON HOUSEHOLD WELFARE IN NIGERIA

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ABSTRACT

This study examined the effect of Value Added Tax (VAT) regressive strain on household welfare in Nigeria, proxied by Final Consumption Expenditure of Households (FCEH). *Ex-post facto* research design was adopted in the study. Using annual data from 1994 to 2023 collected from Central Bank of Nigeria statistical bulletin, the analysis employed Least Square estimation under the Cauchy weighting scheme to account for outliers and data irregularities. The results revealed that VAT has a significant and negative effect on household consumption, with a coefficient of -109.34 ($p = 0.000$), indicating that increases in VAT reduce household welfare. Conversely, the control variables (government recurrent expenditure and inflation) have significant positive impacts on FCEH, suggesting some compensatory role through fiscal spending and price effects. The model explained approximately 73% of the variation in household consumption. In conclusion, increase in VAT directly suppress household consumption, and this reflects the regressive incidence of consumption taxation on welfare as VAT reduces the real disposable income. The adverse effect of VAT can be offset by well-targeted social safety nets such as conditional cash transfers, food vouchers, or energy subsidies for vulnerable populations. Such programs directly compensate households for increased tax-induced costs, thus preserving welfare and stimulating inclusive consumption growth. The study therefore recommended that the adverse effects of VAT can be offset by well-targeted social safety nets such as conditional cash transfers, food vouchers, or energy subsidies for vulnerable populations. Such programs directly compensate households for increased tax-induced costs, thus preserving welfare and stimulating inclusive consumption growth.

Keywords: Final Consumption Expenditure of Households, Household Welfare, Nigeria, Regressive Strain, Value Added Tax (VAT)

1.0 INTRODUCTION

Over the years, discussions on public finance and economic development have increasingly focused on how governments can generate sufficient revenue without placing excessive burdens on their citizens. As developing countries face fiscal pressures due to rising population, infrastructure deficits, and economic shocks, the need to broaden revenue sources has become more urgent. Nigeria, like many other countries, has shifted its attention toward non-oil revenue generation due to the volatility and unpredictability of oil prices (Shuaibu & Gana, 2025; Nduokafor et al., 2024). Among the various non-oil tax options, Value Added Tax (VAT) has emerged as a major instrument for domestic revenue mobilization (Eyide et al., 2025). It is praised for being relatively easy to administer and capable of generating steady revenue.

However, while VAT offers governments a reliable revenue stream, it raises deeper questions about fairness, especially in economies where poverty is widespread and income inequality is high (Kwebulane & Oyekale, 2025). In Nigeria's context, where millions of households struggle with daily living costs (Ademola & Ubale, 2025), any form of consumption tax can provoke concerns about its effects on household welfare. This has led to an ongoing debate among policymakers, academics, and the public regarding whether VAT reforms help or harm the average citizen (Kwebulane & Oyekale, 2025; Ibrahim & Abubakar, 2024; James et al., 2024; Omodero et al., 2023; Adegbite, 2023; Gidigbi et al., 2021; Usman, 2018; Ajibola & Olowolaju, 2017; Taiwo et al., 2016; Obiakor et al., 2015). This study is positioned within this debate, examining whether the design and implementation of VAT in Nigeria impose a regressive strain on households. It probes whether households, particularly low-income ones, experience welfare loss as a result of changes in VAT policy, and whether these effects are adequately addressed in fiscal planning.

Household welfare remains a fundamental measure of the success of any economic policy, particularly in countries where government interventions play a direct role in shaping living standards (Ijirshar et al., 2024). Welfare is not just about income; it includes the ability of households to consume goods and services, access healthcare, provide education for children, and maintain a stable quality of life. In Nigeria, household welfare is under pressure from multiple angles: inflation, stagnant wages, rising unemployment, and unstable exchange rates (Olaoye et al., 2025). In such a fragile economic environment, any tax measure that affects the cost of goods and services must be critically examined. VAT is particularly relevant here, given its direct impact on prices (Kwebulane & Oyekale, 2025).

Although designed to be a neutral and efficient tool for raising revenue, VAT is embedded in the price of everyday goods and services. Its effect is often invisible to consumers but very real in their pockets. In the business environment, VAT is seen as a cost-recovery mechanism where businesses collect the tax on behalf of the government. From a fiscal standpoint, VAT helps reduce reliance on oil revenues, supports budget implementation, and enables government investment in infrastructure. However, its relevance to household welfare goes beyond revenue targets. The impact of VAT on household welfare is particularly important in developing economies where a large portion of the population spends most of their income on consumables. Because VAT is levied on consumption rather than income, it tends to claim a larger share of earnings from low-

income households compared to the wealthy (Bastani & Koehne, 2024). This makes the tax regressive in practice, even if it is flat in theory.

In Nigeria, where 30.9% of the population survives on limited daily income (Tunji, 2025), the rise in VAT from 5 percent to 7.5 percent in 2020 sparked nationwide discussions about its effects on the cost of living (Lumi et al., 2024). The increase was meant to boost government revenue and reduce dependence on oil, but it also increased the price of essential goods and services. While exemptions exist for items such as medical supplies and basic food products, the list of exempted goods remains narrow and often fails to reflect the consumption realities of poor households. The result is that many essential expenses still attract VAT, thereby reducing real household income. Over time, this may force families to reduce consumption, delay healthcare visits, or pull children out of school, all of which reflect declining welfare (Efedhoma & Okpara, 2025). The regressive nature of VAT raises critical questions about social equity, economic justice, and the design of fiscal policy in Nigeria.

In a well-functioning economy, tax systems are designed to raise sufficient revenue while supporting equity and minimizing adverse effects on households (Ouedraogo et al., 2025). Consumption taxes like Value Added Tax (VAT) are often adopted because they can generate stable revenue without discouraging investment or savings. When properly implemented, VAT allows governments to finance public services and infrastructure in a manner that does not overly burden the population. It is expected that essential goods and services would be either exempted or zero-rated, thereby protecting low-income households. In such arrangements, taxation becomes a tool for balanced growth, encouraging compliance and strengthening trust between citizens and the state. When revenue is equitably collected and efficiently used, it translates into better social outcomes, including improved access to education, healthcare, and social protection (Ajeigbe et al., 2024).

However, the structure of VAT in Nigeria apparently lacks sufficient mechanisms to shield vulnerable households from rising living costs. Although the government has raised the VAT rate to boost revenue collection, the consumption pattern of the population has not been adequately considered. Many basic items consumed daily by low-income households still attract VAT, despite some exemptions. This has resulted in higher retail prices for commonly used goods and services. Moreover, the widespread informal nature of Nigeria's economy means the tax burden is disproportionately borne by those with limited means, while wealthier individuals with access to loopholes often find ways to minimize their tax liabilities. This imbalance has created a situation where revenue is raised, but not without causing strain on the daily lives of ordinary Nigerians (Efedhoma & Okpara, 2025). As VAT increases, low- and middle-income families find it harder to meet basic needs. Consumption choices are adjusted downward, and households may be forced to cut spending on health, nutrition, and education. Over time, this can weaken the economic resilience of families and erode social progress. In addition, the perception that tax policies favor the rich while punishing the poor can reduce public trust and compliance, further complicating revenue generation efforts. If left unaddressed, this could widen inequality, lower household living standards, and hinder Nigeria's efforts to achieve inclusive and sustainable development (Ibrahim

& Abubakar, 2024; Omodero et al., 2023; Adegbite, 2023). It is within this context that this study seeks to examine whether VAT has placed a regressive strain on household welfare in Nigeria.

This study, therefore, aimed to empirically assess whether VAT as implemented in Nigeria exerts a regressive burden on household welfare, using final consumption expenditure of households as the measure of welfare. While prior studies have extensively explored the relationship between Value Added Tax (VAT) and household welfare, key methodological and contextual gaps remain unaddressed. For instance, Kwebulane and Oyekale (2025) focused on commodity price shifts resulting from VAT in South Africa, emphasizing welfare impacts through compensating variation but did not consider broader macroeconomic variables or Nigerian-specific data. Ibrahim and Abubakar (2024) used a New Keynesian DSGE model to simulate tax policy outcomes but concentrated on comparative tax impacts, not directly isolating the regressive burden of VAT on household welfare. James et al. (2024) examined personal income and consumption taxes using ARDL but concluded that VAT had no significant effect, potentially overlooking nonlinearities or data irregularities. Omodero et al. (2023) provided regional panel hints across sub-Saharan Africa but did not isolate Nigeria-specific household-level dynamics or account for outliers in their estimations. Adegbite (2023) examined multiple tax forms but did not apply robust estimation techniques to address data irregularities that might influence the validity of VAT-related conclusions. Gidigbi et al. (2021) used ARDL models on macroeconomic variables but did not directly interpret VAT's regressive characteristics or focus on final household consumption. Usman (2018) employed an error correction mechanism to assess consumption taxes but did not differentiate the effects of VAT across income levels or correct for potential estimation biases. Ajibola and Olowolaju (2017) relied on OLS regression without accounting for outliers, which could distort VAT's estimated effects. Taiwo et al. (2016) applied panel regression to regional data in Southwestern Nigeria, limiting national generalizability. Finally, Obiakor et al. (2015) used ex-post facto design with multiple regression models but did not adopt robust techniques capable of addressing heteroscedasticity and structural data issues. Therefore, this study filled a critical gap by applying Robust Least Squares under the Cauchy weighting scheme to assess the regressive nature of VAT on Nigerian household welfare, using a long-term dataset (1994–2023) that enables more accurate and resilient estimations.

2.0 LITERATURE REVIEW

2.1 Conceptual Review

Value Added Tax (VAT) is a consumption-based indirect tax levied on the incremental value added to goods and services at each stage of production and distribution (Omodero et al., 2023). Unlike income taxes, which are paid directly by individuals or corporations based on earnings, VAT is collected by businesses and passed on to the government (Akande, 2024). The tax is embedded in the price paid by the final consumer. The concept of VAT originated in Europe and was first proposed by Wilhelm von Siemens in 1918 (Filip & Putan, 2024). It was later adopted by France in the 1950s before spreading to many other parts of the world (Szewczyk & Olipra, 2025). In Nigeria, VAT was introduced in 1993 to replace the sales tax system through Decree No.

102 (Nwankwo, 2025). It is currently governed by the Value Added Tax Act, which has undergone several amendments to suit changing fiscal priorities and economic conditions.

The structure of VAT in Nigeria is relatively broad-based. It covers most goods and services, with a few exemptions such as medical products and educational materials, and some zero-rated items such as exports (Iwegbe & Daddau, 2024). Initially set at 5 percent, the VAT rate was increased to 7.5 percent in 2020 (Lumi et al., 2024). It is designed to provide a stable source of non-oil revenue and support long-term fiscal sustainability. However, growing concerns have been raised about its distributional effects, especially on low-income households that spend most of their income on consumables (Oluwatobi et al., 2024). Although VAT is expected to be neutral in theory, in practice its effects differ across income groups due to varying consumption patterns and limited access to tax-exempt goods.

On the other hand, household welfare refers to the general well-being and living standards of individuals within a household (Philip & Iorember, 2017). It includes a range of economic and social factors such as income, consumption, access to healthcare and education, housing quality, and overall stability in living conditions (Nworie & Nworie, 2025). In empirical studies, household welfare is often measured using final consumption expenditure, as it captures the ability of households to meet their basic and non-basic needs through spending (James et al., 2024; Omodero et al., 2023).

An increase in consumption expenditure generally indicates that households are better able to afford essential goods and services (Arinze & Odior, 2023). This suggests an improvement in welfare. On the other hand, a decline in consumption points to rising economic stress or reduced purchasing power (Kwebulane & Oyekale, 2025). This makes household consumption a reliable proxy for measuring how tax policies, inflation, or other economic variables affect living conditions. Because taxes such as VAT directly influence prices, they have an immediate impact on what households can afford to buy. Therefore, any rise in VAT or similar consumption taxes is likely to reduce household welfare, particularly when wages remain stagnant or inflation is high. Although, VAT is structured as a flat-rate tax and appears neutral in its design, Amlani (2020) argued that its actual burden tends to fall more heavily on lower-income households. A tax is considered regressive when poorer households pay a higher proportion of their income compared to wealthier ones. In the case of VAT, this occurs because low-income households spend most of their earnings on consumables that attract VAT. In contrast, higher-income households typically spend more on exempt or luxury goods and services or save a larger portion of their income, reducing their effective VAT burden. In Nigeria, where 30.9% of the population lives below the poverty line (Tunji, 2025), the increase in VAT has a pronounced effect on household consumption. As prices rise following VAT increments, low-income households experience reduced purchasing power. Although the government exempts certain basic goods and services from VAT, the range of exemptions is narrow and often does not include all items essential for basic living. The regressive nature of VAT becomes more evident in this context. Even small increases in tax can lead to significant sacrifices for poor households, including reductions in food quality, health spending, or children's education. Moreover, VAT-induced inflation worsens this burden (Kwebulane & Oyekale, 2025). As prices of goods and services increase, households are

forced to adjust by cutting down on essential expenditures. This compromises long-term welfare and deepens inequality. While VAT is a useful tool for boosting government revenue and reducing fiscal deficits (Omodero, et al., 2023), it must be implemented alongside policies that protect vulnerable populations. These may include broader exemptions for essential goods, targeted cash transfers, or subsidized public services. Without such measures, VAT will continue to exert a regressive strain on household welfare, undermining the very goals of inclusive growth and economic stability.

2.2 Theoretical Review

The tax incidence theory (upon which this study is anchored) was propounded by Arnold C. Harberger in 1962. The main postulation of tax incidence theory is that the actual economic burden of a tax does not necessarily fall on the person or group legally responsible for paying it (Mieszkowski, 1967). Instead, the burden depends on the elasticity of demand and supply for the taxed good or service. If demand is inelastic, consumers are likely to bear a larger share of the tax burden because they cannot easily change their consumption patterns. Conversely, if demand is elastic, producers may absorb more of the tax burden since consumers can switch to alternatives. The theory separates the legal incidence (who is supposed to pay the tax) from the economic incidence (who actually suffers the cost of the tax), highlighting that market conditions determine how tax burdens are shifted across society (Mieszkowski, 1969).

The relevance of this theory to the present study lies in its explanation of how Value Added Tax (VAT) ultimately affects household welfare. Although VAT is collected by businesses and remitted to the government, the actual cost is typically passed on to consumers through higher prices (Kwebulane & Oyekale, 2025). Given that basic household goods and services are often subject to VAT, and considering that lower-income households spend a greater proportion of their income on consumption, the theory helps explain why VAT has a regressive effect. This theoretical perspective supports the study's investigation into how VAT erodes household consumption levels in Nigeria, especially among more vulnerable population groups. It provides a conceptual basis for assessing the distributional consequences of VAT and understanding its practical effects on living standards.

Based on the theoretical framework (Tax Incidence Theory) and the objective of the study, which is to examine whether VAT has a regressive effect on household welfare in Nigeria (proxied by Final Consumption Expenditure of Households, FCEH), the alternate hypothesis is:

Ha: Value Added Tax (VAT) has a significant negative effect on household welfare in Nigeria.

2.3 Empirical Review

A critical synthesis of the reviewed empirical studies reveals nuanced and sometimes contradictory perspectives on the effect of Value Added Tax (VAT) on household welfare, often proxied by household consumption. Most studies agree that VAT exerts a regressive strain on low-income households, though the mechanisms and magnitude differ across contexts and methodologies. For instance, Kwebulane and Oyekale (2025) used QUAIDS to show that rising VAT-induced prices

disproportionately reduce welfare for poor households in South Africa, particularly for inelastic goods such as food and housing. Similarly, Usman (2018), using an Error Correction Mechanism in Nigeria, found that VAT and other consumption taxes negatively affect living standards, reinforcing the regressive nature of indirect taxes. Adegbite (2023) further supports this view, concluding that VAT significantly reduces Nigerian household consumption. These findings align with the current study, which identifies a statistically significant and negative effect of VAT on Final Consumption Expenditure of Households (FCEH), confirming that VAT burdens consumption and thus household welfare, particularly among economically vulnerable groups.

However, a second group of studies challenges the universality of VAT's negative effect, emphasizing context-specific or even positive outcomes, especially in the long run. Omodero et al. (2023), using panel ARDL techniques for sub-Saharan Africa, discovered that VAT positively affects household consumption over the long term, although the short-term effects are harmful. Similarly, Gidigbi et al. (2021) found that in Nigeria, VAT and other indirect taxes (including customs and excise duties) positively influenced household consumption, even showing statistical significance at the 1% level. Taiwo et al. (2016) also reported a positive long-term relationship between VAT and household expenditure using panel regression across southwestern Nigerian states. These findings suggest that the timing, fiscal structure, and public response to VAT can shape whether it ultimately constrains or stimulates consumption. They partly diverge from the current study's conclusions, but they also suggest that policy design and compensatory mechanisms may mitigate VAT's short-term strain.

A third cluster of empirical studies shifts the analytical focus by incorporating macroeconomic dynamics and tax policy interactions, further complicating the VAT-welfare nexus. For example, Ibrahim and Abubakar (2024), using a New Keynesian Dynamic Stochastic General Equilibrium (NKDSGE) model, found that although VAT increases reduce output and consumption, they are less harmful to household welfare than company income tax hikes, implying a relative advantage in VAT-centric policies. Meanwhile, James et al. (2024) observed that VAT does not significantly affect household spending in either the short or long run, and instead highlighted personal income tax and exchange rate as more decisive welfare drivers. Additionally, Ajibola and Olowolaju (2017) argued that while VAT is positively associated with consumption, inflation negates its potential benefits. Their results echo the concern that ignoring non-tax variables, such as inflation and exchange rates, could misrepresent VAT's true effects. Therefore, while the present study robustly confirms the negative effect of VAT on household welfare, a broader synthesis of the literature suggests that VAT's effect is conditional, shaped by economic context, policy mix, and implementation strategies.

3.0 METHODOLOGY

This study adopted an *ex-post facto* research design to investigate the regressive effect of Value Added Tax (VAT) on household welfare in Nigeria. The choice of this design is grounded in its suitability for analyzing cause-and-effect relationships using historical data without manipulating the variables under study (Elom et al., 2025; Muojekwu et al., 2025). The nature of the data (annual

macroeconomic time series from 1994 to 2023) makes experimental or survey-based approaches inappropriate, as tax policy variables and household consumption outcomes cannot be influenced or recreated retrospectively. Rather, the design allows for the use of econometric modeling to assess the strength and direction of association between VAT and household welfare, while controlling for the effects of other economic variables.

Household welfare in this study is proxied by Final Consumption Expenditure of Households (FCEH), which is a standard measure reflecting the aggregate amount households spend on goods and services. FCEH is widely used in empirical literature as a reliable welfare indicator, given that it reflects purchasing power, living standards, and overall economic well-being at the household level. This variable, expressed in billions of naira, is obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin. The main explanatory variable is Value Added Tax (VAT) revenue, also in billions of naira, which reflects the annual government collection of indirect consumption tax. In addition to VAT, two control variables are included to capture other macroeconomic factors likely to influence household welfare: Government Recurrent Expenditure (GRE) and Inflation Rate (INF) which was measured using consumer price index. GRE is included to account for the redistributive and stimulative impact of fiscal spending on households, while INF is expected to capture price level effects that may erode real purchasing power and alter consumption behavior.

The linear regression model tested in this study is specified as follows:

$$FCEH_t = \beta_0 + \beta_1 VAT_t + \beta_2 GRE_t + \beta_3 INF_t + \epsilon_t \text{ ---..... } 1$$

Where:

FCEH_t = Final Consumption Expenditure of Households at time t

VAT_t = Value Added Tax revenue at time t

GRE_t = Government Recurrent Expenditure at time t

INF_t = Inflation Rate at time t

β_0 = Intercept

$\beta_1, \beta_2, \beta_3$ = Coefficients of VAT, GRE, and INF respectively

ϵ_t = Error term

The model is designed to determine whether increases in VAT are associated with a reduction in household welfare and whether government spending or inflation can offset such effects. The parameters are estimated using a robust econometric approach that ensures the reliability of the results despite potential data challenges common in macroeconomic time series, such as outliers and non-normal residual distributions.

Unlike conventional Ordinary Least Squares (OLS) regression, which is sensitive to outliers and assumes homoscedastic and normally distributed residuals, this study employs Robust Least Squares (RLS) estimation using the Cauchy weighting function. This technique is particularly effective in contexts where the presence of data irregularities such as heteroscedasticity, structural breaks, or influential data points can compromise the validity of OLS estimates. The Cauchy weighting method down-weights the influence of outliers by assigning lower weights to observations with large residuals, thereby yielding more stable and unbiased parameter estimates.

The rationale for adopting RLS under the Cauchy scheme is based on the historical volatility of economic data in Nigeria, which often suffers from structural inconsistencies, policy shocks, inflationary episodes, and occasional data gaps. These issues can lead to the presence of influential observations that distort parameter estimation and inference. By using the Cauchy approach, the model becomes more resistant to these irregularities, producing estimates that better reflect the true underlying relationships in the data.

Before running the regression analysis, the data were subjected to several diagnostic checks. First, descriptive statistics were computed to understand the central tendencies, dispersion, and distribution of the variables. Next was test of normality. Heteroscedasticity was also tested using White's test, which revealed evidence of non-constant variance in the residuals; further justifying the use of Robust Least Squares over OLS. The model estimation was performed using the RLS algorithm implemented in the statistical software EViews, which supports a range of robust techniques and diagnostic tools. The Cauchy weighting function was applied iteratively until convergence, with the objective of minimizing the sum of the weighted absolute residuals. The resulting model coefficients were interpreted alongside their standard errors, t-statistics, and p-values to determine statistical significance.

4.0 RESULTS AND DISCUSSION

4.1 Descriptive Analysis and Model Diagnostics

Table 1 Descriptive Analysis

	FCEH (₦' Billion)	VAT (₦' Billion)	Inflation	Government Recurrent Expenditure (₦' Billion)
Mean	44296.74	319.8610	153.9647	3281.353
Median	26659.45	213.6950	95.90500	2122.665
Maximum	141696.8	1555.270	643.7800	14287.56
Minimum	916.1300	5.030000	14.36000	90.00000
Std. Dev.	44202.36	372.5201	156.0143	3546.154
Skewness	0.732232	1.736044	1.558927	1.494518
Kurtosis	2.183524	5.813576	4.894298	4.742531
Sum	1328902.	9595.830	4618.940	98440.60
Sum Sq. Dev.	5.67E+10	4024365.	705873.7	3.65E+08
Observations	30	30	30	30

Source: Author's computation (2025)

The descriptive statistics for Final Consumption Expenditure of Households (FCEH) in Table 1 show an average value of ₦44.296 trillion between 1994 and 2023, reflecting the scale of household spending in Nigeria over the period. The maximum FCEH observed was ₦141.697 trillion, while the minimum was ₦916.13 billion, indicating a wide disparity over the years and a significant upward trend in household expenditure. This rise is likely tied to population growth, urbanization, and nominal income increases. The standard deviation of ₦44.202 trillion suggests that household consumption varied widely, with some years deviating significantly from the mean. A skewness value of 0.73 indicates a moderately right-skewed distribution, meaning that more

values are clustered below the mean, with a few high values pushing the average upward. The kurtosis value of 2.18, being slightly below 3, suggests a relatively flat distribution with fewer extreme values than a normal curve. Overall, the figures reflect long-term growth in consumption, alongside noticeable variability driven by economic conditions and fiscal policy shifts.

For **Value Added Tax (VAT)**, Table 1 records an average collection of ₦319.86 billion annually over the 30-year span. VAT revenue ranged from as low as ₦5.03 billion in the early years to a peak of ₦1.555 trillion in recent years, pointing to a sharp rise over time due to rate increases, broader tax coverage, and improved collection mechanisms. The standard deviation of ₦372.52 billion highlights this growth and volatility, showing that VAT receipts have varied substantially. A skewness value of 1.74 reflects a pronounced rightward skew, indicating that most VAT figures were on the lower end, especially in earlier years, with only a few very large values occurring later. The high kurtosis of 5.81 suggests a distribution with a sharp peak and fat tails, meaning VAT receipts were concentrated around the mean with some years of extreme deviation. These patterns capture the developmental trajectory of VAT as a maturing revenue source in Nigeria's fiscal structure.

The statistics for Inflation, measured via the Consumer Price Index (CPI), show a mean value of 153.96, indicating that the average general price level in Nigeria increased significantly over the period. The minimum CPI value was 14.36, while the maximum rose to 643.78, illustrating the extent of inflationary pressure over time. This aligns with historical macroeconomic instability, including currency devaluations, subsidy removals, and structural fiscal deficits. A standard deviation of 156.01 further demonstrates high volatility, with inflation levels frequently diverging from the mean. The skewness of 1.56 confirms a right-skewed distribution, meaning most inflation values clustered toward the lower range, with a few extreme inflation years inflating the average. A kurtosis value of 4.89 suggests a leptokurtic distribution, more peaked and with fatter tails than a normal distribution, indicating both frequent moderate readings and several extreme cases. This inflation behavior plays a critical role in shaping household consumption dynamics and purchasing power in Nigeria.

Government Recurrent Expenditure (GRE), as shown in Table 1, had an average annual value of ₦3.281 trillion, reflecting the scale of Nigeria's routine government spending over the period. The minimum value was ₦90 billion, while the maximum rose to ₦14.288 trillion, illustrating a significant increase in government expenditure over time. This surge can be attributed to expanding government responsibilities, increased wage bills, and fiscal stimulus measures. The standard deviation of ₦3.546 trillion reveals considerable year-to-year variability, pointing to periods of fiscal expansion or restraint depending on political and economic conditions. A skewness value of 1.49 implies a positively skewed distribution, where most years recorded expenditures below the average, with a few very high spending years pulling the mean upward. The kurtosis value of 4.74 shows a leptokurtic shape, with a sharper peak and heavier tails than a normal distribution. This suggests that while recurrent expenditure was generally stable, a few extreme spikes, possibly linked to election cycles or oil revenue booms, caused substantial deviations from typical patterns.

Table 2 Model Diagnostics

Normality Test				
	FCEH	VAT	INFLATION	GOV_REC_EXPENDITURE
Jarque-Bera	3.514110	24.96450	16.63673	14.96344
Probability	0.172552	0.000004	0.000244	0.000563
Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	2.947244		Prob. F(3,26)	0.0514

Source: Author's computation (2025)

The Normality test, as reported in Table 2, uses the Jarque-Bera (JB) statistic to evaluate whether the residuals for each variable are normally distributed. This test is essential because many econometric methods, including linear regression, assume normally distributed residuals to ensure valid inference, especially for hypothesis testing and confidence interval construction. A p-value greater than 0.05 suggests that the null hypothesis of normal distribution cannot be rejected. For Final Consumption Expenditure of Households (FCEH), the p-value is 0.172552, indicating that the distribution of residuals is approximately normal, and this satisfies the assumption of normality. However, for VAT, Inflation, and Government Recurrent Expenditure, the p-values are 0.000004, 0.000244, and 0.000563, respectively: all well below 0.05. This implies that the null hypothesis is rejected for these variables, and their residuals are not normally distributed. Despite this, the overall model estimation remains valid, particularly because the study employed Robust Least Squares estimation, which is resilient to violations of normality and the influence of outliers.

The Heteroskedasticity test, shown in Table 5 under the Breusch-Pagan-Godfrey framework, is used to assess whether the variance of the residuals from the regression model is constant: a property known as homoskedasticity. This assumption is fundamental in ordinary least squares (OLS) regression because the presence of heteroskedasticity can lead to inefficient estimates and invalid standard errors, affecting the reliability of hypothesis tests. In this study, the F-statistic from the test is reported as 0.0514, which, being below the critical value and assuming a standard 5% significance level, suggests that the null hypothesis of homoskedasticity is not rejected. In other words, there is no strong evidence of heteroskedasticity, meaning that the variance of the residuals is relatively constant across observations. This adds credibility to the model results and supports the appropriateness of the chosen estimation technique, particularly in conjunction with the Robust Least Squares method, which further guards against variance-related distortions.

4.2 Test of Hypothesis

Null Hypotheses: Value Added Tax (VAT) has no significant negative effect on household welfare in Nigeria.

Table 3 below shows the test of hypotheses result.

Table 3 Test of Hypothesis

Dependent Variable: FCEH

Method: Robust Least Squares

Variable	Coefficient	Std. Error	z-Statistic	Prob.
VAT	-109.3355	18.94009	-5.772701	0.0000
GOV_REC_EXPENDITURE	14.54401	3.093056	4.702149	0.0000
INFLATION	210.9952	66.24541	3.185055	0.0014
C	-3015.760	1421.582	-2.121411	0.0339
Robust Statistics				
R-squared	0.755847	Adjusted R-squared		0.727675
Rw-squared	0.959964	Adjust Rw-squared		0.959964
Akaike info criterion	66.34765	Schwarz criterion		80.52005
Deviance	2.38E+09	Scale		5963.004
Rn-squared statistic	2839.897	Prob(Rn-squared stat.)		0.000000

Source: Author's computation (2025)

The results in Table 3 show that the estimated model demonstrates strong explanatory power and overall validity. The adjusted R-squared value is 0.7277, indicating that approximately 72.77% of the variations in Final Consumption Expenditure of Households (FCEH) are explained collectively by the three explanatory variables: Value Added Tax (VAT), Government Recurrent Expenditure, and Inflation, over the 30-year period from 1994 to 2023. This suggests that the model provides a good fit for the data. Furthermore, the probability of the Rn-squared statistic is 0.000000, which is statistically significant at the 5% level. This means the null hypothesis that "the model has no explanatory power" is strongly rejected, confirming that the model as a whole is statistically valid and the explanatory variables jointly exert a meaningful effect on household consumption.

The constant coefficient (C) is estimated at -3015.76 with a p-value of 0.0339, which is statistically significant at the 5% significance level. This coefficient represents the estimated value of household final consumption expenditure when all the explanatory variables (VAT, inflation, and government recurrent expenditure) are held at zero. While this scenario is purely hypothetical and unrealistic in real-world economic terms, the negative sign of the constant suggests that in the complete absence of taxation, inflation, and government spending, the baseline consumption level would theoretically fall below zero, implying severe contraction in welfare. The significance of the constant confirms that the model's intercept is not arbitrary and contributes to the stability of the estimation.

The coefficient for Government Recurrent Expenditure is 14.54401, and the associated p-value is 0.0000, which is statistically significant at the 5% level. This coefficient implies that a ₦1 billion increase in government recurrent spending leads to an increase of ₦14.54 billion in household final consumption expenditure, all else held constant. This reflects a positive and significant effect of fiscal spending on household welfare. The size of the marginal effect indicates that recurrent public expenditure, which typically includes salaries, social services, and other routine state operations, stimulates household consumption. This may be due to direct income transfers through wages or indirect support via public service provision. The statistical significance confirms that

the effect is not due to random variation, reinforcing the role of fiscal policy as a potential buffer against the consumption-reducing effect of VAT.

The coefficient of Inflation, measured using the Consumer Price Index (CPI), is 210.9952, with a p-value of 0.0014, showing that the effect is statistically significant at the 5% level. This indicates that a one-unit increase in the CPI index leads to an estimated ₦210.99 billion increase in household consumption, holding other factors constant. This may initially appear counterintuitive, as inflation is often associated with reduced real purchasing power. However, this effect may be explained by the inflation-consumption dynamic in developing economies, where rising prices often accompany increased nominal income, credit access, or urgent consumption behavior before further price hikes. The positive and significant effect of inflation on FCEH suggests that, within the Nigerian context during the study period, price movements coexisted with increased spending; possibly reflecting cost-push inflation alongside a consumption response driven by expectations or necessity.

The coefficient for Value Added Tax (VAT) is estimated at -109.3355, with a p-value of 0.0000, indicating a statistically significant effect at the 5% level. This means that every ₦1 billion increase in VAT collection leads to an estimated ₦109.34 billion decrease in Final Consumption Expenditure of Households (FCEH), holding inflation and government recurrent expenditure constant. This reflects a negative and significant effect of VAT on household welfare. The magnitude of this marginal effect suggests that VAT imposes a regressive strain, where increased taxation erodes household consumption significantly. Since the p-value is below 0.05, the null hypothesis that “VAT has no significant negative effect on household welfare” is rejected. This finding provides strong statistical evidence that VAT reduces household welfare in Nigeria during the study period.

4.3 Discussion of Findings

The result showing a significant and negative effect of VAT on household consumption reflects the regressive nature of indirect taxation in Nigeria, where consumption taxes take a disproportionately higher toll on lower-income households. This finding aligns with the conclusions of Kwebulane and Oyekale (2025), who observed that VAT-induced price increases reduced household welfare, particularly among poorer households. Their use of demand elasticity measures confirmed that essential goods are less responsive to price changes, meaning households cannot easily substitute them, leading to welfare losses when prices rise due to tax adjustments. Similarly, Usman (2018) found that VAT had a negative influence on household living standards, with higher consumption taxes correlating with lower consumption levels, supporting the view that VAT contributes to household financial strain. Adegbite (2023) also confirmed that VAT negatively affects household consumption in Nigeria, consistent with this study's result, and emphasized that indirect taxes such as VAT reduce the ability of households to meet essential needs. Ibrahim and Abubakar (2024), while noting that VAT had a smaller welfare cost than corporate tax increases, still reported that it led to short-term declines in consumption, reinforcing the idea that VAT exerts downward pressure on household expenditure. These converging results

highlight that VAT tends to compress household consumption, particularly when applied broadly across essential goods and services. On the contrary, James et al. (2024) diverged from this view, finding no significant impact of VAT on consumption, possibly due to their modeling strategy or unaccounted nonlinearities in the data, which this study addressed using robust estimation. Similarly, Gidigbi et al. (2021) reported a positive relationship between VAT and consumption, which may stem from the influence of other macroeconomic variables or data differences, though their model showed significant short-run volatility. Hence, the weight of empirical evidence supports the conclusion that VAT exerts a constraining effect on household consumption, particularly when analyzed with more precise and resilient estimation methods.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The findings of this study have important implications for understanding the relationship between indirect taxation and household welfare in Nigeria. The significant and negative effect of VAT on household consumption suggests that the burden of this tax is not evenly distributed, disproportionately affecting households' ability to maintain or improve their living standards. This indicates a regressive tax structure, where lower-income households are likely to feel the impact of tax increases more acutely than higher-income groups, since a larger share of their income goes toward consumption.

The result also signals that VAT, although a major revenue source, may contribute to broader economic pressures by constraining household spending, which is a critical driver of domestic demand and economic activity. When household consumption contracts in response to VAT increases, ripple effects can occur across multiple sectors of the economy, potentially weakening retail markets, slowing production, and lowering overall economic momentum. The long-term dataset used in this study further highlights the persistence of this relationship over time, reinforcing the idea that indirect taxes such as VAT, when implemented without adequate cushioning mechanisms, may consistently erode household welfare. This dynamic also raises questions about the balance between revenue generation and social equity in fiscal policy. The robustness of the findings, achieved through methodological adjustments to control for data irregularities and outliers, suggests that the observed effects are not anomalies but rather a structural feature of the tax-consumption relationship in Nigeria. These implications highlight the role of taxation policy in shaping the financial resilience of households and underline the economic costs that can arise when consumption is taxed without consideration of its wider impact on household welfare and aggregate demand. This evidence offers a basis for deeper inquiry into how fiscal tools influence the economic behavior and well-being of households over time.

5.2 Recommendations

Based on the findings, it is clear that increase in VAT directly suppress household consumption, and this reflects the regressive incidence of consumption taxation on welfare as VAT reduces the real disposable income. The study therefore recommends that the adverse effects of VAT can be

offset by well-targeted social safety nets such as conditional cash transfers, food vouchers, or energy subsidies for vulnerable populations. Such programs directly compensate households for increased tax-induced costs, thus preserving welfare and stimulating inclusive consumption growth.

5.3 Contributions to Knowledge

This study contributes to the existing literature by addressing several methodological and contextual limitations found in earlier works. Unlike Kwebulane and Oyekale (2025), who focused on South Africa without considering broader macroeconomic variables or Nigerian data, this research uses country-specific information covering a longer time span. It also moves beyond the simulation approach of Ibrahim and Abubakar (2024) by empirically examining VAT's impact on household welfare in real-world conditions. The study accounts for nonlinearities and data irregularities often overlooked in works such as James et al. (2024) and Adegbite (2023), and goes further than Omodero et al. (2023) by isolating household-level effects within Nigeria rather than relying on regional averages. By applying Robust Least Squares under the Cauchy weighting scheme, this research corrects for outliers and heteroscedasticity that previous studies like Ajibola and Olowolaju (2017) and Obiakor et al. (2015) did not adequately address. It improves upon the national generalizability missed in Taiwo et al. (2016) and offers a clearer interpretation of the regressive effects of VAT on household consumption than found in Gidigbi et al. (2021) or Usman (2018). By focusing specifically on the final consumption expenditure of households in Nigeria and using a consistent, long-term dataset from 1994 to 2023, the study offers a more reliable assessment of how VAT affects household welfare.

5.4 Suggestion for Further Studies

Future studies should try to look at how VAT affects different groups of households, such as low-income, middle-income, and high-income earners. This can help show who is most affected by tax policies. Researchers can also use survey data where people report their actual spending and how taxes affect them. That would give a clearer picture of what is really happening in homes. It would also be helpful to include other factors like inflation, wages, and the prices of goods and services. Finally, comparing how VAT affects households in different parts of Nigeria could help the government create better tax policies that are fairer and more balanced for everyone.

REFERENCES

- Adegbite, T. A. (2023). Do the consequence of taxation impact household consumptions in Nigeria? Absolute outcome from autoregressive distributed lag (ARDL). *South Asian Journal of Finance*, 3(2).
- Ademola, A. S., & Ubale, L. S. (2025). Investigating the effect of Inflation on Household Standard of Living in Nigeria; Empirical Evidence Using ARDL Model. *FUDMA Journal of Humanities, Social Science and Creative Arts*, 1(AHBSI), 134-141.
- Ajeigbe, K. B., Ganda, F., & Enowkenwa, R. O. (2024). Impact of sustainable tax revenue and expenditure on the achievement of sustainable development goals in some selected African countries. *Environment, Development and Sustainability*, 26(10), 26287-26311.

- Ajibola, J. O., & Olowolaju, P. S. (2017). Taxation and its influence on Household Consumption; The Nigerian Experience. *International Journal of Economics and Business Management*, 3(2), 108-128.
- Akande, A. A. (2024). Value added tax assessment rights' and administration in Nigeria: a call for review. *African Banking and Finance Review Journal*, 15(15), 50-65.
- Amlani, J. (2020). Can a flat-rate VAT promote redistribution? Assessing the impact of abolishing preferential VAT rates on Tunisia's poor. *The Public Sphere: Journal of Public Policy*, 8(1).
- Arinze, S., & Odior, E. S. (2023). Implications of import tariff changes on household welfare in Nigeria: A CGE model approach. *International Journal of Developing and Emerging Economies*, 11(1), 54-82.
- Bastani, S., & Koehne, S. (2024). How should consumption be taxed? *FinanzArchiv*, 80(3), 259-302.
- Efedhoma, P. E., & Okpara, E. (2025). Impact of value added tax on consumer spending behaviour in Edo State, Nigeria. *International Journal of Intellectual Discourse*, 8(1).
- Elom, J., Nworie, G. O., Ugwu, J., Nwogo, J., & Nwele, A. (2025). Carbon management disclosure and firm value in the Nigerian energy market. *Journal of Current Social Issues Studies*, 2(7), 8-23.
- Eyide, M. U., Ughah, A. A., & Eguavoen, I. (2025). Nexus between value added tax (vat) and economic development in Nigeria: implication of coronavirus disease (Covid-19) destruction. *UMM Journal of Accounting and Financial Management*, 5(1), 22-42.
- Filip, A. I., & Putan, A. (2024). Value added tax in European Union. *Ovidius University Annals, Economic Sciences Series*, 24(2), 529-535.
- Gidigbi, M. O., Ademola-John, C. I., & Joseph, A. J. (2021). Effects of indirect taxation on household consumption in Nigeria. *FUW International Journal of Management and Social Sciences (IJMSS)*, 6(1&2), 1-10.
- Harberger, A. C. (1962). The incidence of the corporation income tax. *Journal of Political economy*, 70(3), 215-240.
- Ibrahim, U. B., & Abubakar, I. F. (2024). Welfare implication of alternative tax rates adjustment policy in Nigeria: A DSGE analysis. *CBN Journal of Applied Statistics*, 15(1), 55-82.
- Ijirshar, V. U., Gbaka, S., & Tar, V. M. (2024). Insecurity and household welfare in Nigeria. *JCMM's Kaleidoscope Journal of Management Research*, 1(1), 76-83.
- Iwegbe, E., & Daddau, H. (2024). Impact of value added tax on economic growth of Nigeria. *UNIZIK Journal of Marketing*, 1(1), 118-130.
- James, D., Omodero, C. O., Nwobodo, H., Odhigu, F. O., & Adeyemo, K. A. (2024). Taxation and consumers' spending patterns in Nigeria: An autoregressive distributed lag and error correction model approach. *International Journal of Economics and Financial Issues*, 14(3), 157-169.
- Kwebulane, B. L., & Oyekale, A. S. (2025). Effects of value added tax increase on households' welfare in South Africa. *Acta Economica*, 23(42).
- Lumi, M., Rakiya, A., & Mele, J. R. (2024). Effect of increase of 7.5% value added tax on revenue generation in Nigeria. *AKSU J. Admin. Corporate Governance*, 1(1), 67-76.
- Mieszkowski, P. (1969). Tax incidence theory: The effects of taxes on the distribution of income. *Journal of Economic literature*, 7(4), 1103-1124.
- Mieszkowski, P. M. (1967). On the theory of tax incidence. *Journal of Political Economy*, 75(3), 250-262.

- Muojekwu, H. O., Ochuka, C. E., & Nworie, G. O. (2025). Value creation in Nigerian listed consumer goods firms through entrepreneurial cash management. *Quantitative Economics and Management Studies*, 6(3).
- Nduokafor, C. F., Ovwighose, C. S., & Nwoye, U. J. (2024). Effect of oil and non-oil revenue of the federal government on the economy of Nigeria. *Journal of Contemporary Issues in Accounting*, 5(2), 16-40.
- Nwankwo, C. B. (2025). Value added tax on digital services: an analysis of Nigeria's approach towards global standards. *Nnamdi Azikiwe University Journal of Private and Property Law*, 2(1), 127-137.
- Nworie, G. O., & Nworie, F. N. (2025). Homepreneurship and economic wellbeing of households: A perspective study of selected Igbo female entrepreneurs in Ebonyi State. *CECCAR Business Review*, (6), 66–78. <https://doi.org/10.37945/cbr.2025.06.07>
- Nworie, G. O., Chukwu, U. C., & Nworie, F. N. (2025). Achieving household financial wellbeing in Ebonyi state: the contribution of household accounting. <https://doi.org/10.21203/rs.3.rs-6945199/v1>
- Obiakor, R., Kwarbai, J., & Okwu, A. (2015). Value added tax and consumption expenditure behavior of households in Nigeria: An empirical investigation. *International Review of Social Sciences*, 3(6).
- Olaoye, O. J., Anyanwu, S. O., & Umeokwobi, O. (2025). Monetary policy impact on household welfare through consumption in Nigeria. *Journal of Ecohumanism*, 4(2), 2035-2046.
- Oluwatobi, A. J., Omodero, C. O., Ololade, B. M., Ekundayo, G., & Odhigu, F. O. (2024). An evaluation of taxpayers' perception of value added tax and cost of living in Nigeria. *International Review of Management and Marketing*, 14(5), 166.
- Omodero, C. O., Jones, E., & Ekundayo, O. (2023). Value added tax and household consumption in Sub-Saharan Africa: Evidence from Nigeria and South Africa. *International Journal of Applied Economics, Finance and Accounting*, 17(2), 305-316.
- Ouedraogo, I., Dianda, I., Ouedraogo, P. P. R., Ouedraogo, T. R., & Konfe, B. (2025). The effects of taxation on income inequality in sub-Saharan Africa. *Comparative Economic Studies*, 67(1), 84-149.
- Philip, A., & Iorember, P. T. (2017). Macroeconomic and household welfare impact of increase in minimum wage in Nigeria: A computable general equilibrium model. *American Journal of Economics*, 7(5), 249-258.
- Shuaibu, M., & Gana, U. (2025). Unlocking Nigeria's non-oil export potential: do trade financing and digital payment play a role? *Economic Horizons/Ekonomski Horizonti*, 27(1).
- Szewczyk, R. M., & Olipra, Ł. (2025). *Tackling VAT gap in the European union—guidelines for standard set of instruments* (Doctoral dissertation, Department of Economic Policy and European Regional Studies).
- Taiwo, F. H., & Morufu, O. L. A. D. E. J. O. (2016). Impact of value added tax (vat) collection on household consumption expenditure in south western Nigeria. *International Journal of Marketing and Technology*, 6(4), 1-21.
- Tunji, S. (2025, May 4). Poverty rate among rural Nigerians now 75% – W'Bank. *Punch Newspapers*. Retrieved from <https://punchng.com/poverty-rate-among-rural-nigerians-now-75-wbank/>
- Usman, I. C. (2018). The effect of consumption tax on households standard of living in Nigeria (A Disaggregated Analysis). *Lafia Journal of Economics and Management Sciences*, 3(1), 22-22