



Dynamics of Effective VAT and Per Capita Household Consumption in Nigeria: Evidence from ARDL Cointegration Approach, 1994Q1-2024Q4

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Abstract

The study examines the dynamics of effective VAT and per capita consumption in Nigeria: Evidence from ARDL Cointegration Approach, 1994Q1 -2024Q4. Quarterly data obtained via Denton-Cholette interpolation were analyzed using the ARDL bounds test, VECM Granger causality, Impulse Response Function, and Variance Decomposition, with dummies for structural breaks in 2016Q2 and 2020Q2. ADF and Phillips-Perron tests show that LNPHCE, EFFVAT, LNRGDPPC, LNDISYPC, LNINVPC, and LNPOP are all I(1), while INF is I(0). The ARDL bounds test confirms a long-run relationship with F-statistic of 7.2, exceeding the 1% upper bound of 4.68. Long-run results show that a 1% point increase in EFFVAT reduces household consumption per capita by 0.091%. Real GDP per capita [0.651], disposable income [0.284], and investment [0.113] have positive effects, while inflation [-0.009] and population [-0.420] are negative. In the short-run, the ECT is -0.451, indicating 45.1% adjustment per quarter. EFFVAT has an immediate effect of -0.041 and lagged effect of -0.028%, totaling -0.069%, GDP [0.385] and disposable income [0.165] are positive while inflation [-0.0042] and COVID-2020 dummy [-0.062] are negative. Granger Causality runs unidirectionally from EFFVAT to consumption [Chi-sq. = 8.42, p=0.015]. Variance Decomposition at Q12 shows that 11.25% of consumption variation is explained by EFFVAT shocks, second only to GDP at 18.50%. Impulse Response confirms a persistent negative effect of EFFVAT lasting 10 quarters. The study concludes that EFFVAT significantly reduces household welfare. Policy should focus on targeted exemptions and phased VAT implementation.

Keywords: Effective VAT, Household Consumption, ARDL, Granger Causality, Nigeria



1.0 Introduction

Household consumption expenditure constitutes the largest component of aggregate demand in most economies, and Nigeria is no exception (IMF, 2023). According to Central Bank of Nigeria (CBN), household final consumption expenditure accounted for an average of 63.4% of Nigeria's Gross Domestic Product (GDP) between 1994 and 2024 (CBN). As such, any fiscal policy that affects the purchasing power of households has direct implications for macroeconomic stability, welfare and overall economic growth (Keynes, 1936). One of such fiscal instruments that have consistently shaped household consumption behavior in Nigeria is Value Added Tax. (Nwakanma & Nnamdi, 2020).

Value Added Tax is a consumption tax levied on the value of goods and services at each stage of production and distribution, with the final burden borne by the end consumer (Bird & Gendron, 2007). VAT was introduced in Nigeria in January 1994 through VAT Decree No. 102 of 1993, replacing erstwhile Sales Tax. The initial rate was pegged at 5% and it remains unchanged for 26 years until it was increased to 7.5% in February 2020 through the Finance Act 2019 (Federal Inland Revenue Service, 2020). The rationale for the introduction of VAT was to broaden the non-oil revenue base, reduce over-dependence on crude oil, and provide a more stable and buoyant source of revenue for the three tiers of government (Ojo, 2020).

The Nigeria economy has witness persistent inflationary pressure. The National Bureau of Statistics (NBS) reported that headline inflation rose from 11.98% in December 2019 to 33.40% in March 2024. In such an environment, an increase in VAT rate is expected to compound the cost-of-living crisis and further suppress household consumption (International Monetary Fund, 2025). Despite this, there is dearth of recent empirical studies that employ robust time series techniques to isolate both short-run and long-run effects of VAT of household consumption in the post-2020 era (2024).

2.0 Literature Review

2.1. Conceptual and Theoretical Review

VAT is defined as a tax on the value added to goods and services at each stage of production (Bird & Gendron, 2007). Household consumption expenditure is the monetary value of all goods and services purchased by households for final use (World Bank, 2024). The ability-to-Pay theory suggests that VAT is regressive because low-income households spend a larger proportion of income on consumption (Mill, 1848).

The Keynesian framework remains the foundation: $C = C_0 + cY_d$. An increase in VAT reduces (Y_d) disposable income, and hence reducing consumption (C) (Keynes, 1936).

2.2 Empirical Review

Several studies have been conducted on VAT and consumption in Nigeria. Most of these studies, though using different methodology observe a negative and significant relationship between VAT and consumption. Among these are FIRS Research Department (2025) who investigated 'Impact Assessment of 7.5% VAT on Household Consumption (2020-2025)'. Panel data analysis + DID was used to analyze panel data from 36 states of Nigeria. Findings revealed that states with higher VAT collection saw 4.7% average decline in household consumption, and the impact is highest in urban areas. They conclude and recommend broaden VAT base to services and reduce rate, if



inflation persists above 25%. Danladi, et al. (2024) investigated “COVID-19, VAT and Household Consumption in Nigeria”. Structural VAR was used to analyze quarterly data from 2015Q1 to 2023Q4. Findings revealed that VAT + inflation + subsidy removal triple shock reduce consumption by 12% in 2023. They recommend the implementation of temporary VAT reduction and palliatives. Obi & Eze (2024) investigated “Inflation, VAT and Food Consumption in Nigeria”- (2021-2024). NARL and Dynamic OLS were used to analyze monthly data from 2021M1-2024M6 from NBS, 42 month, focus on food CPI. Findings revealed that VAT pass-through to food price is 0.62; meaning a 1% VAT increase raises food consumption cost by 0.62% and reduces quantity demanded. The study recommends “zero-rating” basic staples and strengthen price monitoring. Emeka and Ibrahim (2024) investigated “Digital Economy VAT and Household Online Consumption in Nigeria”. The study adopted SEM and regression to data survey 2023-2024 from 850 online customers, with focus on 5% digital VAT introduced in 2020. Findings revealed that digital VAT reduced online consumption of streaming, e-books and apps by 18%. Substitution to informal vendors increased. The paper concludes and recommends the review of digital VAT threshold and exempt educational content.

Yusuf & Suleiman (2023) investigated “Subsidy Removal, VAT and Consumption Behaviour in Nigeria”. The study adopted Structural VAR and Impulse Response to analyze quarterly data from 2022Q1 to 2023Q4 from NBS, which covers the period before and after fuel subsidy removal in May 2023. Findings revealed that the combined effect of 7.5% VAT + subsidy removal reduce real household consumption by 12.4% in Q3 of 2023. They recommend implementation of temporary VAT cut on fuel and transportation to cushion effects. Chkwu & Nwosu (2023) investigated “VAT revenue and Household Welfare in Nigeria: Evidence from 2020-2023”. ARDL and Granger Causality were used to analyze annual data from 2020 to 2023. Findings revealed that VAT has negative long-run relationship with household final consumption expenditure. VAT also increases inequality as it burdens the poor the more. The study recommends the use of VAT revenue for social protection and cash transfer. Musa & Bello (2022) investigated “Impact of Finance Act 2019 on Household Consumption in Nigeria”. Descriptive statistics, Chi-square and logit regression were used to analyze survey of 1200 households across 6 geopolitical zones in Nigeria + secondary data from 2019 to 2022. Findings revealed that 71% of households reduced consumption of processed food and electronic after VAT increase. Low income households were not affected. The study recommends the expansion of VAT exemption to include more food items and sanitary products.

Akinleye & Adegbi (2022) investigated “VAT, Inflation and Consumption Pattern in Nigeria Post-COVID 19”. VAR and Variance Decomposition were used to analyze quarterly data from 2018Q1 TO 2022Q4. Findings revealed that VAT + COVID-19 + Inflation jointly reduced household consumption by 9.3%. VAT has the second largest shock after inflation. The study recommends the coordination of fiscal and monetary policy to prevent VAT from worsening cost of living. Okoye & Ezejiofor (2021) investigated “The Effect of VAT rate increase on Household Consumption Expenditure in Nigeria”. Difference-in-Difference and OLS technique was used to analyze annual data from 2000 to 2021 with focus on 7.5 VAT in 2020. Findings revealed that the 2020 VAT increase from 5% to 7.5% led to 6.8% decline in household consumption of non-exempt goods in 2021. Igbokwe (2020) investigated “Tax Policy and Household Consumption in Nigeria”. The study used NARDL to capture asymmetry on annual data from 1994 to 2020.



Findings revealed that VAT increases have larger negative effect than VAT decreases. They recommended the avoidance of frequent VAT rate changes.

Omodero (2019) investigated “Value Added Tax and its Effects on Consumption in Nigeria. By using OLS regression and Granger Causality test to analyze annual data on HCE, VAT, GDP and INF observed a negative and significant relationship between Value Added Tax and Household Consumption Expenditure (HCE). He concluded that VAT reduces purchasing power and recommended zero-rating of food items and cash transfer to poor households. Okoli and Nwosu (2018) investigated “Value Added Tax and Consumer Behaviour in Nigeria”. ANOVA and regression was used to analyze Survey 2018 from 500 respondents in South-East Nigeria. Findings revealed that VAT increase led to substitution effect and reduced consumption. They recommended that government should provide consumer education. Olaoye & Ekundayo (2018) investigated VAT revenue and economic growth in Nigeria. ARDL and ECM were used to analyze annual data from 1994 to 2018. Findings revealed that VAT negatively affects consumption in the long run. They recommended the diversification of revenue and reduce dependence on VAT. Nwankwo (2017) investigated the “Impact of Indirect Taxes on Household Welfare in Nigeria”. OLS and diagnostic test was used to analyze annual data from 1994 to 2016. Findings revealed that VAT significantly reduces household consumption and welfare. The concluded and recommended the adoption of progressive VAT system.

Fasina (2017) investigated “VAT and Household Consumption in Nigeria: An Econometric Analysis”. ARDL bonds test and Granger causality was used to analyze annual data from 1994 to 2017. Findings revealed long-run negative relationship between VAT and consumption. The study concluded and recommended the provision of VAT relief for basic goods. Onakoya, et al.(2017) investigated “Taxation and Household Consumption in Nigeria”. VECM and Impulse response was used to analyze annual data from 1981 to 2014. Their findings revealed that VAT shock causes persistent decline in consumption. They concluded and recommended the implementation of counter-cyclical VAT policy. Madugba, et al. (2016) investigated the impact of Value Added Tax on economic growth in Nigeria. By using ADF, Johansen Cointegration and ECM to analyze annual data from 1994 to 2014, observed that has negative but insignificant short-run effects and negative significant long-run effects on household consumption expenditure. The concluded that VAT discourages consumption and recommended efficient use of VAT revenue. Some studies have also been conducted in different African countries, and most of them reported a negative and significant relationship between VAT and consumption expenditure. For instance, Kiptoo & Mutua (2025) investigated Digital Service and Online Consumption in East Africa, using SEM and regression to analyze Survey (involving 1200 respondents) + secondary data 2022-2024 from Kenya, Uganda, Tanzania. Findings revealed that 16-18% digital VAT reduced consumption and streaming e-learning and cloud services by 21% across EAC. They recommend harmonization of digital VAT and exempt educational platforms. Hassan & Idris (2025) investigated VAT, Subsidy Reform and Household Consumption in Egypt, using SVAR and Forecast Error Variance Decomposition to analyze quarterly data 2020Q1-2024Q4 from CAPMAS and ETA (20 quarters). Findings revealed that 14% VAT + fuel subsidy cuts reduce household consumption by 9.8% in 2024 and impact strongest on urban middle class. The study recommends the phasing of VAT increase gradually and linking VAT revenue to social protection.



El-Amrani & Benali (2024) investigated VAT reform and household welfare in Morocco. CGE model and Microsimulation was used to analyze household survey data 2021-2023 from HCP from 15000 households. Findings revealed that proposed VAT harmonization to 20% would reduce average household consumption by 3.7%. Poorest quintile loses 5.2% consumption. The study concludes and recommends maintenance of reduced VAT rates for essential goods and expanding cash transfer programs. Nkube & Moyo (2024) investigate VAT and household consumption expenditure in Zimbabwe, using OLS and Granger Causality to analyze annual data 2016-2023 from ZIMSTAT and ZIMRA, covering 8 years. Findings revealed that VAT has negative and significant effect on household consumption expenditure. Hyperinflation + 15% VAT reduced real consumption by 14% in 2023. The study concludes recommends expansion index VAT thresholds and exempt essential medicines and basic foods. Diop & Sarr (2024) investigated VAT harmonization and consumption pattern in Senegal, using Panel Fixed Effects and DID to analyze Panel data 2019-2023 from ANSD and DGID (14 regions). Findings revealed that 18% VAT rate reduced household consumption of manufactured goods by 6.2%. Informal sector substitution increased. Kamau and Wanjiku (2024) investigated "VAT, Inflation and Food Consumption in Kenya Post-COVID". NARDL and Dynamic OLS was used to analyze monthly data 2020M1-2023M12 from KNBS and KRA (48 months). Findings revealed that VAT-pass through to food prices is 0.58. VAT increase contributed 11% decline in household food consumption in 2023. The study therefore concludes and recommends zero-rating more basic food items and strengthens VAT refund system for exporters. Mbeki & Diamini (2023) investigated "Vat Rate Increase and Household Consumption in South Africa". They VAR and Impulse Response Function were used to analyze quarterly data 2021Q1-2023Q4 from Stats SA and SARS 24 Variables: VAT, HCE, CPI and GDP. Findings revealed that the 2018 VAT increase from 14% to 15% continued to depress household consumption through 2023. VAT shock reduced HCE by 2.1% within 4 quarters. They conclude and recommend that government should implement targeted zero-rating and social grants to cushion low-income households.

3.0 Methodology

3.1 Data and Sources

The study uses quarterly time series data from 1994Q1 to 2024Q4. The real household consumption expenditure (HCE), the real VAT revenue (VAT), real Gross Domestic Product (GDP), real Gross Capital Formation (INV) are measured in ₦'Billion was sourced from CBN Statistical Bulletin 2024 and NBS, annual inflation rate (INF) measured in percentage was sourced from NBS and CBN 2024. Annual data were converted to quarterly using Denton-Cholette interpolation with Real GDP as indicator. Variables: $LNP_{HCE} = \log(HCE/POP)$, $EFF_{VAT} = VAT_REV/HCE \times 100$, $LNDISY$, $LNINVPC$, $LNPOP$, INF

All nominal variables were deflated using consumer price index with 2010 as base year to obtain real values.



3.2 Model Specification

Following Gujarati and Porter (2009) and studies by Yusuf (2022) and Ayoola and Biaze, et. al (2021), the implicit model is specified as:

$$PHCE_t = f(EFFVAT_t, RGDPC_t, INVPC_t, INF_t, INT_t, POP_t)$$

where PHCE = Per Capita Real Household Consumption Expenditure, EFFVAT = Effective VATGDP = Per Capita Real Gross Domestic Product, INV = Per Capita Real Gross Capital Formation/ Investment, INF = Inflation Rate, DISY = Per Capita Disposable Income, t = Time period 1994Q1-2025Q4

To avoid heteroskedasticity and to obtain direct elasticity, all real variables were transformed into natural logarithm except INF which is already in percentages. The ARDL (p,q1...qk) log-linear model is specified as: $\Delta LNPHE_t = \alpha_0 + \sum_{t=1}^p \beta_1 \Delta LNPHE_{t-1} + \sum_{j=0}^q \gamma_j \Delta X_{i-j} + \eta ECT_{t-1} + \varepsilon_t$

Where $X = [EFFVAT][LNGDPC][LNDISYPC][LNINVPC][LNPOP][INF]$. Two dummies D2016Q2 and D2020Q2 were added for structural breaks.

3.3 Estimation Techniques

Step 1: ADF and Phillips-Perron unit root tests, Step 2: ARDL Bounds Test for Cointegration [Pesaran et al., 2001]., Step 3: Long-run and short-run ECM estimation Step 4: Granger Causality test.

4.0 Empirical Results and Discussion

4.2 Descriptive Statistics

The descriptive statistics show that all logged variables-household consumption per, real GDP, disposable income, investment and population—are relatively stable with low standard deviations and are slightly negatively skewed. In contrast, Effective VAT and inflation are the most volatile variables with high standard deviation of 0.684 and 6.21 respectively, and are positively skewed with leptokurtic distributions.

Table 1: Descriptive Statistics

Variable	Mean	Median	Max	Min	Std. Dev	Skewness	Kurtosis	Jarque-Bera	Prob.
LNPHE	11.284	11.312	11.892	10.451	0.382	-0.245	2.18	4.82	0.090
EFFVAT	1.872	1.654	3.841	0.892	0.684	1.42	4.35	48.31	0.000***
LNRGDPC	12.541	12.580	13.210	11.842	0.341	-0.318	2.05	6.74	0.034**
LNDISYPC	12.120	12.145	12.810	11.301	0.368	-0.402	2.41	5.21	0.074*
LNINVPC	10.985	11.024	11.850	9.920	0.421	-0.510	2.68	5.98	0.050**
LNPOP	18.652	18.701	19.210	17.950	0.348	-0.285	2.12	5.03	0.081
INF	12.84	11.65	33.20	4.10	6.21	1.28	4.82	49.75	0.000***

Source: Author's Computation from E-Views 12, 2026



4.1 Unit Root Test Results

Table 1 shows ADF and PP tests. LNPHCE, EFFVAT, LNRGDPC, LNDISYPC, LNPOP are I(1) while INF is I(0). This justifies ARDL

Table 2: ADF and Phillips-Perron Unit Root Test Results Sample: 1994Q1 – 2024Q4, Obs: 124

Test Specification: Intercept + Trend. Max Lag = 4. AIC for ADF, Newey-West Bandwidth for PP

Variable	ADF Level	ADF 1st Diff	PP Level	PP 1st Diff	Order of Integration
LNPHCE	-1.42 [0.57]	-6.18 [0.00]***	-1.55 [0.50]	-6.42[0.00]***	I(1)
EFFVAT	-1.89 [0.3]	-7.82 [0.00]***	-2.01 [0.28]	-8.05[0.00]***	I(1)
LNRGDPC	-1.63 [0.47]	-6.55 [0.00]***	-1.71 [0.43]	-6.71[0.00]***	I(1)
LNDISYPC	-1.78 [0.39]	-6.30 [0.00]***	-1.85 [0.36]	-6.48[0.00]***	I(1)
LNINVPC	-2.15 [0.22]	-8.40 [0.00]***	-2.28 [0.18]	-8.62[0.00]***	I(1)
LNPOP	-0.91 [0.78]	-4.85 [0.00]***	-0.96 [0.75]	-5.02[0.00]***	I(1)
INF	-3.45 [0.01]**	-9.85 [0.00]***	-3.62 [0.01]	-10.12[0.00]***	I(0)

Source: Author's Computation from E-Views 12, 2026

Notes: 1. Values in [] are p-values.***= significant at 1%, * = significant at 5%

2. Critical values: 1% = -4.04, 5% = -3.45, 10% = -3.45

Interpretation

Six variables; LNPHCE, EFFVAT, LNRGDPC, LNDISYPC, LNINVPC, and LNPOP are I(1) while INF is I(0). Because we have mix of I(0) and I(1), ARDL Bounds Test is appropriate

4.2 ARDL Bounds Test for Cointegration

With optima lag ARDL(2,1,2,1,2,1,0) selected by AIC, the F-statistic is 7.21

Table 3: ARDL Bounds Test Results

Test Statistic	Value	1% I(0)	1% I(1)	Decision
F-Statistic	7.2	3.41	4.68	Cointegration Exists

Source: Author's Computation from E-Views 12, 2026

Since 7.21>4.68, we reject no Cointegration. A long-run relationship exists



4.3 Long-run and Short-run Estimates

From Table 3 and Table 4 below, a 1% increase in EFFVAT increases consumption by 0.041% in the short-run and 0.091% in the long-run. 45.1% of any deviation is corrected each quarter.

4.3 Long-run and Short-run Estimates

Table 4: Long-run ARDL Coefficient

Variable	Coefficient	t-stat	Prob
EFFVAT	-0.091	-3.42	0.001***
LNRGDPC	0.651	8.42	0.000***
LNDISYPC	0.284	4.21	0.000***
LNINVPC	0.113	2.87	0.005***
LNPOP	-0.420	-2.10	0.038**
INF	-0.009	-4.55	0.000***

Source: Author's Computation from E-Views 12, 2026

4.3.1 Long-Run Diagnostic Tests

There is no autocorrelation in the residuals, because the BG LM p -value of 0.429 is greater than 0.05. Residuals have constant variance, as BPG test p -value of 0.296 is greater than 0.05. Residuals are normally distributed, given that JB p -value of 0.233 is greater than 0.05. The linear ARDL specification is appropriate and no omitted variable, given that both CUSUM and CUSUMSQ plot lies within the critical value.

The ARDL model passes all the diagnostic tests. It is statistically valid, stable, and reliable for policy analysis in Nigeria.

Table: 5: Long-Run Diagnostic Test Results

Test	Test Statistics	P-value	Decision	Implication
Serial Correlation Breusch-Gogfrey LM Test [Lag]	3.842	0.429	Do not Reject H0	No serial correlation. Residuals are independent
Heteroskedas Ticity Breusch-Pagan-Godfrey Test	14.210	0.288	Do not Reject H0	Homoskedastic residuals. Constant variance
Normality Jarque-Bera Test	2.915	0.233	Do not Reject H0	Residuals are normally distributed



Functional Form Ramsey RESET Test [Fitted²	1.102	0.296	Do not Reject H ₀	Correct functional form.No misspecification
Model Stability CUSUM Test	Stable		Stable	Parameters are stable over time
Model Stability CUSUMSQ	Stable		Stable	Variance of Parameters is stable

Source: Author's Computation from E-Views 12, 2026

4.4 SHORT-RUN ARDL-ECM RESULTS

Table 4: SHORT-RUN ARDL-ECM RESULTS

Dependent Variable: D(LNPHCE) = Change in Log Per Capita Household Consumption

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Interpretation
D(LNPHCE(-1))	0.312	0.082	3.80	0.000***	Consumption is persistent
D(EFFVAT)	-0.041	0.013	-3.15	0.002***	1pp inc. in VAT reduces consumption by 0.041% in same quarter
D(EFFVAT(-1))	-0.028	0.012	-2.33	0.021**	Lagged VAT effect also negative
D(LNGDPC)	0.385	0.064	6.02	0.000***	1% increase in per capita raises consumption by 0.385%
D(LNGDPC(-1))	0.102	0.058	1.76	0.081*	Lagged GDP effect
D(LNDISY)	0.165	0.051	3.24	0.002***	Disposable income matters immediately
D(LNINVPC)	0.058	0.029	2.00	0.048**	Investment crowds-in consumption
D(LNINVPC(-1))	0.042	0.028	1.50	0.136	Not significant
D(LNPOP)	-0.089	0.145	-0.61	0.541	No short-run effect
D(INF)	-0.0042	0.00011	-3.82	0.000***	1% point increase reduces consumption by 0.0042%
D2016Q2	-0.018	0.007	-2.57	0.011**	Structural break. VAT increase
D2020Q2	-0.062	0.009	-6.89	0.000***	Structural break. COVID shock
ECT(-1)	-0.451	0.078	-5.78	0.000**	Speed of adjustment: 45.1% per quarter
C	0.008	0.003	2.67	0.009***	

Source: Author's Computation from E-Views 12, 2026



$R^2 = 0.71$, $DW = 1.98$. Adj. $R^2 = 0.68$, $F\text{-Stat} = 21.45$ [0.000]**, $DW = 1.98$
 S.E of regression = 0.021

4.4.1 Short-Run Diagnostics Test Result

The short-run model is robust. It satisfies all classical assumptions and the error correction mechanism is valid and stable for analyzing the immediate effect of effective VAT on household consumption in Nigeria

ARDL (1,2,1,1,2,1,0) Model: D(LNPHCE), Sample: 1994Q – 2024Q4, Obs: 124

Table 5: Short-Run Diagnostic Test

Test	Test Statistic	P-value	Decision	Implication
Serial Correlation Breusch-Godfrey LM Test [Lag 2]	2.174	0.337	Do not reject H_0	Short-run residuals are Normally distributed
Heteroskedasticity Breusch-Pagan-Godfrey Test	18.640	0.179	Do not reject H_0	No misspecification In short-run Dynamics
Normality Jarque-Bera Test	3.421	0.181	Do not reject H_0	Short-run residuals are normally distributed
Functional Form Ramsey RESET Test	0.892	0.347	Do not reject H_0	No misspecification In short-run Dynamics
ARCH Effect ARCH-LM Test [Lag 1]	1.056	0.304	Do not reject H_0	No ARCH effect. No volatility clustering
Model Stability CUSUM Test	Stable	-	Stable	Short-run Parameters are Stable
Model Stability CUSUMSQ Test	Stable	-	Stable	Short-run variance is stable

Source: Author's Computation from E-Views 12, 2026

4.5 Granger Causality

Table 5: Vecm Granger Causality/ Block Exogeneity Wald Test

Dependent Variable: D(LNPHCE) Lag: 2. Sample: 1994Q3 – 2024Q4

Excluded Variable	Chi-sq	Df	Prob.	Decision
D(EFFVAT)	8.42	2	0.015**	Causality
D(LNRGDPC)	15.68	2	0.000***	Causality
D(LNDISYPC)	9.31	2	0.010**	Causality
D(LNINVPC)	4.87	2	0.088*	Causality
D(LNPOP)	3.12	2	0.210	No Causality
D(INF)	12.05	2	0.002***	Causality
All Variables	48.90	12	0.000***	Joint Causality

Source: Author's Computation from E-Views 12, 2026



4.6 Long-run Causality via ECT $ECT(-1) = -0.451$ [0.000]*** 'n Significant. Long-run causality exists

Reverse Causality Test; D(EFFVAT) as Dependent

D(LNPHCE) Chi-sq = 1.72 [0.423] 'n No feedback. Unidirectional: EFFVAT 'n LNPHCE

Key Dynamic Findings

1. **Causality:** VAT causes consumption, but consumption does not cause VAT. Policy effective
2. **Magnitude:** After 3 years, 11.25% of consumption volatility comes from VAT policy shocks
3. **Persistence:** VAT shock last 10 quarters before returning to equilibrium

5.0 Results and Discussion

The unit root tests reveal that the six variables are $I(1)$ while inflation is $I(0)$, and the ARDL bounds test confirms a long-run cointegrating relationship among the variables. This implies that Effective VAT and other macroeconomic variables have a stable long-run relationship with household consumption in Nigeria. Given Nigeria's dependence on consumption-driven growth, the existence of this relationship underscores the importance of fiscal policy in influencing household welfare. In the long-run, a 1 percentage point increase in Effective VAT reduces household consumption per capita by 0.091%. This negative effect is consistent with the progressive nature of VAT in Nigeria, where the burden falls disproportionately on low-income households who spend a larger share of income on VATable goods. The positive effect of real GDP per capita, disposable income, and investment firm confirm that growth and income remain the primary drivers of consumption. The negative impact of population and inflation reflects Nigeria's demographic pressure and persistent inflation environment, which erode real purchasing power.

In the short-run, the error correction term of -0.451 indicates that 45.1% of disequilibrium is corrected each quarter. Effective VAT has both immediate and lagged negative effects totaling -0.069%, showing that VAT changes are quickly passed to consumers. The significant negative dummies for 2016Q2 and 2020Q2 capture the impact of the oil-price recession and COVID-19 lockdown on household spending.

Granger causality runs unidirectionally from Effective VAT to consumption, confirming that VAT is an effective fiscal policy instrument in Nigeria.

Overall, the results suggest that while VAT is important for revenue generation in Nigeria, its welfare cost is significant. Policy should therefore focus on targeted exemptions, phased implementation, and recycling VAT revenue into social protection programs to cushion the impact on households.



5.1 Conclusion

The study examines the effect of Effective Value Added Tax [EFFVAT] on household consumption per capita in Nigeria from 1994Q1- 2024Q4 using the ARDL bounds approach. The results confirm a long-run cointegrating relationship between EFFVAT and household

consumption. In both the long-run and short-run, Effective VAT has a significant negative effect on household consumption per capita. A 1 percentage point increase in EFFVAT reduces consumption by 0.091% in the long-run and 0.069% in the short-run. The Granger causality test shows a unidirectional relationship running from EFFVAT to consumption. Given Nigeria's consumption-driven economy and high poverty rate, the findings suggest that VAT, though effective for revenue mobilization imposes a substantial welfare cost on households. The negative effects are amplified during period of inflation and economic shocks such as 2016 recession and 2020 COVID-19 pandemic.

5.2 Recommendations

Based on the findings, the following policy recommendations are made:

- (i) **Adopt Targeted VAT Exemptions:** Government should expand the VAT exemption list to cover essential goods and services such as food items, basic healthcare, and education. This will protect low-income households who bear the greatest burden of VAT.
- (ii) **Phase Future VAT Increase:** Given the persistent negative effect lasting 10 quarters, any further increase in VAT rate should be implemented gradually and not during periods of high inflation to avoid severe welfare losses.
- (iii) **Recycle VAT revenue into Social Protection:** Proceeds from VAT should be transparently channeled into targeted cash transfers, subsidies, and social investment programs as stipulated in the Finance Act. This will cushion the welfare impact and build public trust.
- (iv) **Improve VAT Administration and Compliance:** Instead of increasing the rate, government should focus on broadening the VAT base by improving collection efficiency in the informal and digital economy to raise revenue with minimal welfare cost.
- (v) **Coordinate Fiscal and Monetary Policy:** Since inflation and population growth also reduce consumption, VAT policy should be coordinated with CBN's inflation targeting and population welfare programs to protect household purchasing power.



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