Value Added Tax and Household Consumption Expenditure Among Selected ECOWAS Countries

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Abstract
The study examined the impact of Value Added Tax on household consumption expenditure in the selected ECOWAS countries (Nigeria, Ghana, and Cote d'Ivoire). This study employed several panel estimation techniques such as the Pooled Mean Group (PMG), Mean Group (MG), and Dynamic Fixed Effect (DFE) to investigate the impact of Value Added Tax on household consumption expenditure in Nigeria, Ghana, and Cote d'Ivoire. The operational variables for this research work were Value Added Tax, household consumption expenditure, per capita income, and the inflation rate for the period 1994–2023. Data used for analysis were extracted from World Bank Development Indicators. Results showed that the long-run effect of VAT on household consumption is negative but statistically insignificant, indicating that VAT does not have a significant impact on household consumption expenditure in the long run. The study also showed a significant bidirectional causal relationship between Value Added Tax (VAT) and household consumption expenditure (HCE). This indicates that changes in VAT not only influence household consumption but that household consumption patterns also affect VAT revenues. Consequently, the study recommended that sustainable per capita income growth should be promoted as a top priority, as higher income levels directly lead to increased household consumption. Moreover, VAT policies need to be carefully calibrated to balance the need for government revenue generation with the potential adverse effects on household consumption. Controlling inflation is another crucial aspect that requires immediate attention. Central banks and national governments must prioritize inflation control by implementing sound monetary policies that stabilize prices.

Keywords: Consumer price index, household consumption expenditure, per capita income, value added tax
JEL Classification: H31, H21, E21, C33, E62

1. Introduction

Globally, household consumer expenditure has declined sharply in recent times. Available records from the World Bank (2022) development indicators showed that household consumption expenditure in West African countries has declined over the years. This decline in consumption expenditure could be due to a variety of circumstances, such as increases in VAT rates, changes in oil prices, inflation, dwindling economic performance, among other reasons. In Nigeria, household expenditure was $334.27 billion as of 2019. This declined to $276.22 billion and $273.98 billion in 2020 and 2021, respectively. In Ghana, household consumption expenditure was $40.2 billion in 2019, declined to $39.27 billion in 2020, and increased to $46.4 billion in 2021. Furthermore, in Cote d'Ivoire, household consumption expenditure indicated a declining trend from $51.4 billion in 2019 to $49.15 billion in 2020 and increased to $54.4 billion in 2021.

In West African nations, government interventions have been necessary to some extent in order to support economic growth and development. This is because the government typically provides necessities such as healthcare facilities, water, energy, education, and security. Although improving citizens' social and economic well-being continues to be the major goal of governments in sub-Saharan Africa, it is debatable how effectively fiscal policies address concerns of consumption (Nyiputen & Abijia, 2022). Nevertheless, governments in West African nations have consistently raised money through taxes in order to pay for the provision of goods and services to their populace (Abiola & Asiweh, 2012). One way to raise money is through the administration of Value Added Tax (VAT), which has been claimed to impact citizens' consumption habits in West African nations (Adegbite, 2018; Kathure, 2017).

While household consumption expenditure has been on the decline in West African countries in recent times, the governments of the sub-region have designed and implemented a number of social intervention programs to cushion the price effect of VAT and improve household consumption patterns in the sub-region. In Nigeria, government programs designed to impact household consumption expenditure include N-Power (Nigeria), Conditional Cash Transfer (CCT), School Feeding Programs, and the Government Enterprise and Empowerment Program (GEEP), among others. In Ghana, similar programs were used to serve the same purpose as those in Nigeria. Such programs include the Livelihood Employment Against Poverty (LEAP), Capitation Grant, School Feeding Program, and the National Entrepreneurship and Innovation Plan (NEIP), among others. In Cote d'Ivoire, International Fund for Agricultural Development (IFAD) loans were used to reduce poverty by promoting household food security in poor rural communities. It is worrisome, however, to note that, despite all these laudable programs, the level of household consumption expenditure has continued to decline among ECOWAS countries. It is on this note that studies concerning the effect of VAT on household consumption expenditure among ECOWAS countries have persisted.

According to Umar, Aliero, and Gatawa (2018), adjustments to the VAT rate may affect the cost of products and services, which in turn may impact household consumption patterns. As a result, Ugwa and Embula (2012) noted that inflation is an additional element that may impact household consumption spending. Therefore, it is reasonable to assume that as VAT rises, the cost of products and services rises as well, causing inflation and a fall in a household's purchasing power, which in turn leads to a decrease in consumption expenditure. However, the current study provides data to support these theories. Research on the relationship between Value Added Tax (VAT) and household consumption expenditure in West African countries has been conducted by Nyiputen and Abijia (2022); Bala and Sani (2020); Adegbite (2018); and Kathure (2017). These studies are country-level studies, and it is the desire of the current study to extend the investigation by studying a sub-regional grouping. Studying different countries has the following advantages over a country-level study: First, a comparative study provides a platform for cross-learning among the countries under consideration. Best policies and development strategies can be learned, shared, and adopted for replication among the countries. This could inform policy decisions in all these countries, allowing them to learn from each other's successes. Second, studying a single country makes it difficult to generalize the findings of the study, considering the diverse nature of the ECOWAS region. By conducting a comparative study, one can determine whether the observed relationship between Value Added Tax and household consumption expenditure holds true across different economic contexts within ECOWAS. This strengthens the overall conclusions of the study.

Thus, the current study seeks to conduct a comparative assessment of the impact of VAT on household consumption expenditure across West African countries to offer policy recommendations that will contribute to a more effective fiscal policy for ECOWAS. This study focuses on three ECOWAS countries (Nigeria, Ghana, and Cote d'Ivoire). The justification for selecting these countries is that they are the leading economies in the West African sub-region, with an aggregate share of over 60 percent of the region's population. Furthermore, these three countries control over 80 percent of the 2022 estimated total West African regional GDP of approximately USD 724.7 billion (World Bank, 2022). The study seeks to achieve the following objectives:

i. Ascertain the extent to which VAT influences household consumption expenditure in the selected ECOWAS countries.
ii. Investigate the causality between VAT and household consumption expenditure in the selected ECOWAS countries.

2. Literature Review

Conceptual Review

Value Added Tax: Value-added tax refers to the consumption tax imposed on goods and services at every level of the supply chain, from the point of production to the point of sale (Kagan, 2019). The amount of VAT that the customer must pay is based on the product's cost, less any previously taxed expenses of the components used to make it. This definition makes it apparent who is ultimately responsible for paying taxes, but it omits to mention whether taxes are being imposed to raise money or to deter consumption. Value-added tax is a consumption tax that is applied to a product at every stage of the supply chain, from the point of manufacture to the point of sale, according to Oseni (2017). This suggests that the amount of VAT paid by the customer is based on the purchase price of the goods, minus the cost of any already taxed supplies. VAT is a consumption tax since it is applied to goods and services that are sold to customers, much like a sales tax. VAT is a consumption tax that is assessed at every point in the consumption chain and is paid for by the final user of the good or service, according to Oghuma (2017). Its application modality entails a multi-step collection process. This implies that the customer and supplier, respectively, are responsible for paying and collecting VAT at each stage of the manufacturing or operating process. Value-added tax, according to Omesi and Nzor (2015), is the goods and services tax (GST) applied to the value added that arises from each exchange. VAT is a tax that is gathered from the individual who is actually responsible for paying the tax in an indirect manner. In order to increase revenue generation, VAT is an indirect tax levied on products and services, according to Onwuchekwa, Suleiman, and Aruwa (2014). The authors claim that VAT will stop consumption from rising at the same rate as income. The variance in value-added tax rates throughout West African nations is mirrored in the varying definitions of the tax by different authors. For instance, the current VAT rate in Nigeria is 7.5%, while that of Ghana is 15% and 18% for Ivory Coast. This implies that the VAT revenue generated by these countries differs, and it consequently exerts a varying impact on the household consumption expenditure of citizens in these countries. However, for the purpose of this study, the definition of value-added tax as given by Oghuma (2017) shall be adopted. According to him, VAT can be defined as a consumption tax levied at each stage of the production chain and borne by the final consumer of the product or service in the form of higher prices.

Household Consumption Expenditure: Ajibola and Olowolaju (2017) defined household consumption expenditure as the total amount of goods and services that a household consumes during a specific period of time. It describes the final purchases that members of a household make to satisfy their basic necessities, which include, but are not limited to, food, clothing, housing, services, transportation, health, and leisure. It can also mean the market worth of all goods and services, including household purchases of durable goods like electrical appliances, vehicles, washing machines, home computers, and printers. It includes imputed rent for owner-occupied homes but excludes purchases of real estate. It also entails paying taxes and fees to the government in order to acquire licenses and permits. Here, household consumption expenditure includes the expenditures of non-profit institutions serving households, even when reported separately by the country (World Bank, 2022). According to Schorfheide (2010), consumption expenditure is the total amount a household spends on products and services they intend to consume. He also argued that, of all the fundamental categories of expenditure that lead to the creation of products and, consequently, the earning of revenue, consumer expenditure is by far the most important. Additionally, he expressed the opinion that, in any free-market economy, the quantity of disposable income that individuals have determines the overall amount of money they spend on personal consumption. According to Fasoranti (2009), consumption is correlated with the psychological law of Lord Maynard Keynes, which states that men are generally inclined to raise their consumption in proportion to their income growth, but not by as much. According to Tim (1996), it is the entire amount of goods and services that consumers in the economy want to acquire in order to consume them right now. According to Anyanwu (1995), consumption is the amount of money households spend on products and services, including apparel, food, entertainment, medical care, and asset acquisition, among other things. The notion of the consumption function, which illustrates the connection between consumption and disposable income, is derived from this formula. However, for the purpose of this study, consumption can be defined as the total money's worth of all goods and services consumed by all households within an economy at a given time to satisfy their daily needs. These needs may include food, clothing, housing, services, transport, health, leisure, etc. According to Idris and Sebastine (2022), value-added tax (VAT) has an impact on household consumption expenditure. This is because prices rise in response to government increases in VAT and fall in response to tax reductions on products and services. Households are able to purchase more or fewer goods for consumption in exchange. An increase in the value-added tax rate may eventually result in lower household consumption. If this happens, a drop in household consumption would be expected as disposable income would decline. Ikwuagwu, Ariwa, and Onyele (2017) looked into variables other than VAT that affected Nigerians' aggregate consumption expenditures. They discovered that the three main factors influencing aggregate consumption expenditure were income, interest rates, and inflation rates. The Autoregressive Distributed Lagged Model (ARDL) is employed by the authors in their analysis to demonstrate that aggregate consumption expenditure is positively and significantly impacted by income. Additionally, it seemed that interest rates had a big impact on overall consumer spending. Furthermore, their study demonstrated that consumption spending was strongly predicted by the rate of inflation. This and other publications make it clear that inflation and disposable income influence consumer spending in a major way; hence, these factors must be taken into account in this study.

Theoretical Review

Absolute Income Hypothesis: The Absolute Income Hypothesis was developed by the British economist John Maynard Keynes (1883–1946) and was further improved upon by renowned American economist James Tobin (1918–2002). The Keynesian theory of consumption considered the relationship between income and consumption. The theory posited that the level of income determines the consumption of an individual and society. Keynes (1936), in his book titled The General Theory of Employment, Interest, and Money, listed a number of factors, such as objective and subjective factors, that affect a society's consumption. Subjective (psychological) factors are internal or endogenous influences that cause a person to avoid making purchases. These factors can include, but are not limited to, pride, enterprise, and precautionary motives. On the other hand, external variables, known as objective (institutional) factors, have the power to alter or shift the consumption function's position. Changes in income, interest rates, and fiscal policy are a few examples of these variables. Keynes believed that the most important factor influencing society's consumption, as well as an individual's, is the current income level. Keynes put forward a psychological law of consumption, according to which, as income increases, consumption increases but not by as much as the increase in income. In other words, the marginal propensity to consume is less than one: $1>MPC>0$. Although this theory works well for explaining consumption in the short term, attempts to apply it over a longer period have not yielded the same results. As a result, other economists developed alternative theories of consumption that were based on other important variables they believed affected consumption in addition to income. Keynes's aggregate consumption expenditure hypothesis was initially incorporated into the general hypothesis, but it was soon confronted by an empirical conundrum. This theory is more relevant in this study than other consumption theories because it considers the relationship between income and consumption, which is the focus of the study.

Sacrifice Theory of Taxation: The Sacrifice Theory of Taxation was propounded by British Economist Mill (1848). The Sacrifice Theory of Taxation posits that taxes should be levied based on the sacrifice citizens make to support government services and functions. In essence, the theory suggests that the tax burden should be distributed in proportion to individuals' ability to bear it, thereby ensuring fairness and equity in the tax system. Mill argued that individuals who benefit more from government services and protection should bear a greater proportion of the tax burden, reflecting the sacrifice they make to fund those services. This principle implies that those with higher incomes or wealth should pay more in taxes, as they can afford to do so without significant detriment to their standard of living, while those with lower incomes should bear a lesser burden. In relation to the present study, the Sacrifice Theory of Taxation suggests that the tax burden imposed by VAT should be distributed equitably among households in proportion to their ability to bear it. Specifically, the theory implies that VAT should not disproportionately burden lower-income households, as they may face greater hardship in meeting their basic consumption needs. Instead, VAT should be structured and implemented in a way that reflects individuals' ability to pay and ensures fairness in the distribution of the tax burden. This entails examining the impact of VAT on household consumption patterns and assessing whether the tax system aligns with the principles of equity and social justice advocated by the Sacrifice Theory.

Empirical Review

A study on the effect of Value Added Tax on Private Consumption Expenditure on Manufactured Goods in Nigeria was conducted by Nyiputen and Abiajia (2022). The study examined how VAT affected Nigerian private consumption expenditure on manufactured products using secondary data from 1990 to 2021. The study made use of variables that affect private consumption spending on manufactured products in Nigeria, including value-added tax, per capita income, real GDP, consumer price index, and private domestic credit. The Autoregressive Distributed Lag (ARDL) technique was used to examine the long-run and short-run relationships that existed between the variables. The results show that while real GDP and private domestic credit (PDC) have the opposite effects, value-added tax (VAT), consumer price index (CPI), per capita income (PCI), and infrastructure (INFR) all positively and significantly impact private consumption expenditure (PCE) of manufactured goods in Nigeria over the short and long terms. However, the only factor that significantly affects PCE is PDC. The study concludes that value-added tax, per capita income, infrastructure, and the consumer price index are the main factors impacting private consumption spending on manufactured goods in Nigeria. The focus of this study is country-specific and limited to Nigeria; hence, further research is needed to consider other West African countries, such as Ghana and Côte d'Ivoire.

Idris and Sebastine (2022) used time series data spanning the years 1985 to 2020 to investigate the empirical link between household consumption and indirect tax in Nigeria. It specifically examined the long- and short-term relationships between household consumption and indirect tax. The study used cointegration estimation and ordinary least squares estimation techniques to determine the link between household consumption and indirect tax. The study found that value-added tax and household consumption have a positive but negligible association. It also showed that while the inflation rate has a negative influence on household consumption, personal income tax has a negative impact. There was no statistically significant relationship between value-added tax and household consumption. However, the statistical significance of the inflation rate was observed, whereas the probability value of personal income tax was statistically significant. While the approach of this investigation is plausible, the focus of the study is country-specific and limited to Nigeria; hence, further research is needed to consider other West African countries, such as Ghana and Côte d'Ivoire.

Azer and Tengiz (2022) carried out a study to examine the effect of macroeconomic variables on household consumption in Georgia using the ARDL technique. The yearly aggregate data used in this analysis spans the period from 1983 to 2018. The study found a long-run negative relationship between household final consumption expenditure and gross domestic savings. It also showed positive and significant long-run relationships between GDP per capita and household consumption, as well as a significant and negative relationship between savings and household consumption in both the short and long run. The focus of this study is country-specific and limited to Georgia, making it different from the ongoing study.

Gidigbi, Ademola, and Andezetso (2021) conducted research on the effect of indirect taxation on household consumption in Nigeria, using secondary data from 1981 to 2017. The study used value-added tax, exchange rate, per capita income, interest rate, inflation rate, and customs and excise duty as independent variables, with household consumption as the dependent variable. The Autoregressive Distributed Lag (ARDL) technique was used to examine the long-run and short-run relationship dynamics between the variables. The results

revealed that value-added tax, interest rate, and two-period lagged interest rate have a positive and significant impact on household consumption. In the same vein, past customs and excise duty had a positive and significant impact on real household consumption at a 5 percent level of significance. The Error Correction Model (ECM) coefficient revealed that any deviation in the model would be corrected in approximately 11 months and was statistically significant at the 1 percent significance level. The study recommended that tax administrative loopholes should be plugged for tax revenue to contribute immensely to the development of the economy, since value-added tax and lagged customs and excise duty had a significant impact on household consumption. Moreover, the scope of the study is limited to Nigeria and cannot be relied upon for policy decisions in a broader regional context.

Bala and Sani (2020) estimated the effect of Value Added Tax (VAT) on consumption in Nigeria using annual data from 1994 to 2018. The variables captured in the model include consumption, VAT, interest rate, and inflation rate. This study further employed the Autoregressive Distributed Lag approach in estimating the relationship among the variables. The study revealed that VAT has a positive and statistically significant impact on consumption in Nigeria. Therefore, this study recommends the need for the government to review the VAT rate from time to time in order to serve as a technique for controlling and checkmating the level of consumption in Nigeria. The scope of this study is limited to Nigeria and does not consider other West African countries.

Otemu (2020) studied the effect of value-added tax on government income and household consumption patterns in Nigeria. Quarterly time-series data on value-added tax, government income, and consumption patterns were obtained from the Central Bank of Nigeria statistical bulletin during the period 2000–2018. The ordinary least squares (OLS) estimation technique was adopted in the analysis of data, and findings revealed that while value-added tax contributes significantly to government revenue, largely, value-added tax moderates consumption patterns in Nigeria. In view of the findings, the study recommended, among others, that the government, via its regulatory agencies, should inject some fairness into the tax system in the area of consumption tax so that the burden of income tax would lessen on those with a low-income level. Moreover, the regulatory agency charged with the sole task of collecting value-added tax should further be strengthened to enforce compliance by taxpayers. The scope of this study is limited to Nigeria and does not consider other West African countries.

Omodero (2020) investigated the consequences of indirect taxation on consumption in Nigeria using secondary data that covers the period from 2005 to 2019. The study used both Value Added Tax (VAT) and Customs and Excise Duties (CED) to determine their effects on consumption using the least squares technique. The results indicated that VAT insignificantly but positively influences consumption, while CED has a considerable auspicious influence on use. This result shows that VAT imposition on merchandise and services is discouraging the absorption of specific foodstuffs and services and allowing the operation of informal economic activities to thrive in Nigeria. However, CED charges do not reduce the use of certain illegal products purposely taxed to discourage their consumption. This study recommends a reduction in the prices of food items and services to enable consumers to increase their patronage, while the products that attract CED but are harmful should be banned entirely. Offenders should be allowed to face the wrath of the law. The scope of this study is limited to Nigeria and does not consider other West African countries.

Adegbite (2018) investigated the effects of Value Added Tax on household consumption expenditure in Nigeria from 1994 to 2016. The multiple regression analysis technique was used to measure the effects of independent variables on the dependent variable, while unit root tests, Johansen co-integration, the Vector Error-Correction Model, and Granger causality tests were employed to determine the long-run relationship and causality links among the variables. Results showed that disposable income (DPDY) has a positive significant impact on household consumption expenditure. DPDY Granger causes HCEXP. HCEXP also Granger causes DPDY. VAT has a negative significant effect on HCEXP. VAT does not Granger-cause HCEXP, but HCEXP Granger-causes VAT. The interest rate has a negative insignificant effect on HCEXP; interest rates do not Granger-cause HCEXP, and HCEXP does not Granger-cause interest rates. In conclusion, value-added tax had a negative significant effect on household consumption expenditure in Nigeria in both the short run and the long run. Value-added tax affected the prices of goods and services, which invariably affected the consumption of households. Unidirectional causality existed between value-added tax and household consumption expenditure in Nigeria. The study, therefore, recommended that the government should effectively use its tax system to cushion the negative effects of this tax on households by investing in the provision of infrastructure and public goods and services. The approach of this study is plausible; however, the scope is country-specific and limited to Nigeria, neglecting other ECOWAS countries.

Kathure (2017) investigated the impact of VAT on household final consumption expenditure in Kenya using quarterly time series data from 1990 to 2014. The study employed the Vector Error Correction (VEC) technique to investigate the dynamic response of household final consumption expenditure growth in Kenya due to shocks in the growth of VAT revenue, growth of disposable income, and growth of the inflation rate. Granger causality was employed to examine the relationship between value-added tax revenue and household final consumption expenditure in Kenya. The study found that value-added tax revenue growth moderately affects household final consumption expenditure growth in Kenya. The study also revealed that increasing VAT revenue growth curtailed household final consumption expenditure growth in the short run but stimulated household final consumption expenditure growth before stabilizing it in the long run. These effects were statistically significant. Additionally, growth in household final consumption expenditure and growth in value-added tax revenue do not Granger-cause each other. The study concluded that the government should look for other ways of raising VAT revenue instead of increasing the tax base. The approach of this study is plausible; however, the scope is country-specific and limited to Kenya, which is different from the ongoing investigation.

Fasina and Oladeju (2016) evaluated the impact of Value Added Tax (VAT) collection on household consumption expenditure in southwestern Nigeria. The study examined the extent to which VAT collection influences household consumption expenditure in southwestern Nigeria by adopting a panel method covering a period of ten (10) years. Random sampling incorporated with the Slovin Formula was used to select 356 respondent tax officers and vatable persons, as well as 353 households of VAT-rated goods, on whom questionnaires were administered. Secondary data were sourced from the approved budgets of the selected states from 2002 to 2011. The panel regression method, augmented with the co-integration approach and vector autoregression, was used to analyze collected data. VAT and consumption variables were co-integrated in the long run for the states. The study revealed that VAT has

the potential to positively enhance the revenue generation of the sampled states. The result of the test clearly indicates that an increase in VAT necessitates an increase in consumption expenditure. The sample period of 10 years (2002–2011) is too short for the ongoing investigation.

Onyinyechi, Ihendinihi, Ekwe, and Azubuike (2016) empirically examined the impact of fiscal policy on the economy of Nigeria between 1994 and 2014. The multiple regression of the ordinary least squares estimation was the tool used to analyze the data in this study. In the model, real GDP (as the dependent variable) was regressed on capital expenditure, recurrent expenditure, tax revenue, and external debts. The study revealed that there exists no significant relationship between capital expenditure, recurrent expenditure, tax revenue, and real GDP, which represents the economy. However, the study found a significant negative relationship existing between external debts and real GDP. This supports the Keynesian view of government actively intervening in the economy using various appropriate policy instruments. The study, therefore, recommends that the government should use fiscal policy to complement the adoption of effective monetary policy and maintain the rule of law to promote stability in the Nigerian economy. The scope of the study is limited to Nigeria; hence, there is a need for further research to consider other West African countries, such as Ghana and Côte d'Ivoire, among others. Although several studies have attempted to examine the effect of Value Added Tax on household consumption expenditure, none of these studies is focused holistically on West African countries like Nigeria, Ghana, and Côte d'Ivoire. Keho (2019) examined the impact of government spending on private consumption among ECOWAS countries and showed crowding out effects in six countries but crowding in effects in one country and no significant effect in five countries. The study found that government consumption does not stimulate aggregate demand and economic growth among ECOWAS countries. However, the focus of the work was on government expenditure.

3. Methodology

Data and Sources

The data used for this study were sourced from the World Bank (2023) Development Indicators. Data were sought for the following variables: value-added tax and household consumption spending from 1994 to 2023. To ensure comparability, the study considers all monetary values in US dollar terms. The ECOWAS countries considered in the study are Nigeria, Ghana, and Côte d'Ivoire.

Model Specification

Following the theoretical postulation by the Keynesian model and the Sacrifice Theory of Taxation, this study will adapt its model from the background information provided by the Keynesian Theory of Consumption and incorporate other variables into the model based on the previous studies of Onyinyechi, Ihendinihi, Ekwe, and Azubuike (2016). The mathematical model shown by the above study is specified as follows:

RGDP = f (CExp, RExp, TaxRev, ExtD) …… (1)

Where;
RGDP = Real Gross Domestic Products

CExp = Capital Expenditure

RExp =Recurrent Expenditure

TaxRev = Tax Revenue

ExtD = External Debt

Therefore, in line with this explanation, the model is specified to capture the relationship between value-added tax and household consumption expenditure. The functional form of the model is stated as:

$$HCE = f(VAT, PCI, INF) \quad \ldots\ldots (2)$$

Where,

HCE = Household consumption expenditure

VAT = Value added tax

PCI = Per Capita income

INF = Inflation rate

There is a need to observe the inflation rate because past scholarly works suggest that inflation may influence how household expenditure is made, thus affecting the a priori expectation of the effect of VAT on household consumption expenditure. Specifically, to achieve the objective of this study and based on the property of the linearity of variables, the functional relationship is modeled in a linear equation as follows:

$$HCE_{it} = \beta_0 + \beta_1 VAT_{it} + \beta_2 PCI_{it} + \beta_3 INF_{it} + U_{it} \quad \ldots\ldots (3)$$

Where:

U_{it} is the error term which denotes other variables that are not specified in the model;

i represent the number of countries and t is the number of years.

The error term was decomposed as $U_{it} = H_{it} + E_{it}$. Where:

E_{it} is the standard disturbance term, which varies across years and countries, while

H_{it} is a set of group specific effects, which refer to each country in the model.

Method of Data Analysis

The method of data analysis in this study involved the use of several panel estimation techniques, including the Pooled Mean Group (PMG), Mean Group (MG), and Dynamic Fixed Effects (DFE) estimators. Each of these methods has its strengths and limitations in capturing the dynamic relationships among variables in heterogeneous panels. The Hausman test was employed to determine the most efficient estimator for the dataset. Additionally, the study

employed the Augmented Mean Group (AMG) estimator as an alternative to the Pesaran (2006) Common Correlated Effects Mean Group (CCEMG) estimator. The AMG method was particularly suited for the analysis as it addresses unobservable common factors. Traditional panel approaches often treat these unobservable factors as nuisance terms, but in cross-country empirical studies, they hold substantive significance. The AMG approach is particularly useful in panels with nonstationary variables and multifactor error structures, as shown in Monte Carlo simulations by Bond and Eberhardt (2009). These simulations demonstrated that AMG performs comparably to CCEMG in terms of bias and root mean square error (RMSE), particularly when dealing with panels that exhibit cointegration or multifactor error terms. This makes AMG a robust alternative in empirical growth studies, as it effectively captures the common dynamic process across groups while allowing for heterogeneity in long-run and short-run relationships.

4. Results and Discussion

The descriptive statistics for each country and the average statistics are presented in Table 1.

Table 1: Descriptive Statistics

Variable	HCE ($ Billion)	VAT ($ Billion)	PCI ($)	INF (%)
All				
Obs	90	90	90	90
Mean	83.60	227.00	1777.57	13.45
Std. Dev.	109.00	485.00	478.58	13.57
Côte d'Ivoire				
Obs	30	30	30	30
Mean	24.50	668.00	1832.86	3.70
Std. Dev.	13.10	647.00	294.26	5.05
Ghana				
Obs	30	30	30	30
Mean	26.90	8.08	1411.36	19.99
Std. Dev.	20.60	9.57	402.93	13.52
Nigeria				
Obs	30	30	30	30
Mean	199.00	4.62	2088.50	16.64
Std. Dev.	121.00	0.84	460.52	14.28

Source: Extracts from STATA Output

For the overall data, the descriptive statistics in Table 1 show that for the combined dataset of 90 observations across all three countries, the average Household Consumption Expenditure (HCE) stands at $83.60 billion, with a standard deviation of $109 billion. This wide variability suggests that household spending on consumption differs greatly between countries. Given the substantial standard deviation of 109, some countries in the sample are likely to have much higher household consumption expenditure than others, indicating significant economic diversity in terms of consumer spending capacity. The average VAT collection across the three countries is $227 billion, but the standard deviation of $485 billion suggests even greater variability. This reflects major differences in tax revenue generated from

VAT, which could be due to variations in economic structure, tax policies, or levels of economic development among the countries. A high standard deviation of 485 in VAT points to the presence of outliers, where one or more countries could be generating significantly higher VAT revenue compared to others, possibly indicating stronger domestic markets or more effective tax systems.

The Per Capita Income (PCI) for the combined group averages $1,777.57, with a standard deviation of $478.58. This relatively moderate variation indicates that, while income levels vary across the countries, the differences are less extreme compared to household consumption expenditure and VAT. The standard deviation suggests some degree of inequality in income distribution, but the variations are within a narrower range, potentially reflecting relatively similar income levels across these economies. The inflation rate (INF) also shows an average of 13.45%, with a standard deviation of 13.57%, indicating that inflation is highly variable across the countries. This high variability reflects economic instability in some countries, where inflation rates could fluctuate sharply due to factors such as currency depreciation, changes in global commodity prices, or differing monetary policies.

For Côte d'Ivoire, HCE averages $24.50 billion, with a standard deviation of $13.10 billion. This relatively low standard deviation compared to the overall dataset indicates more stable household consumption expenditure in Côte d'Ivoire. The lower average HCE, compared to the combined dataset, suggests that household spending in Côte d'Ivoire is on the lower end, possibly reflecting lower income levels and purchasing power among households. In terms of VAT, Côte d'Ivoire shows a mean of $668 billion, with a standard deviation of $647 billion. The high standard deviation points to substantial fluctuations in VAT collections, possibly due to changes in economic activity, tax reforms, or compliance issues over time. PCI in Côte d'Ivoire averages $1,832.86, with a standard deviation of $294.26, indicating relatively stable income levels across the country. The lower variability in PCI suggests that income distribution is more even in Côte d'Ivoire, with fewer extremes in wealth or poverty compared to other countries in the sample. INF is low in Côte d'Ivoire, with an average of 3.70% and a standard deviation of 5.05%. This suggests that inflation has been relatively stable, reflecting effective inflation control policies or less economic volatility compared to the other countries. The low inflation rate also indicates that the cost of living has remained manageable, with less pressure on household consumption and purchasing power.

In Ghana, HCE averages $26.90 billion, with a standard deviation of $20.60 billion, indicating moderate variability in household consumption expenditure. The higher mean HCE compared to Côte d'Ivoire suggests that household spending in Ghana is higher, potentially reflecting greater economic activity or higher disposable income. However, the higher standard deviation indicates that household consumption has fluctuated more significantly over time, possibly due to economic instability or changes in household wealth. VAT in Ghana is notably lower, with a mean of $8.08 billion and a standard deviation of $9.57 billion. The low average VAT collection suggests that Ghana generates less tax revenue from VAT, possibly due to a smaller domestic market, lower consumption levels, or a less efficient tax system. PCI in Ghana is also lower, averaging $1,411.36, with a standard deviation of $402.93. This suggests that income levels in Ghana are lower compared to the overall sample, with moderate variability indicating some inequality in income distribution. Inflation in Ghana is also significantly higher, with an average of 19.99% and a standard deviation of 13.52%. This indicates that Ghana has experienced high and volatile inflation, which could erode household purchasing power and affect consumption patterns.

Nigeria exhibits the highest average HCE, at $199 billion, with a standard deviation of $121 billion. This indicates that household consumption expenditure in Nigeria is substantially higher than in the other two countries, possibly due to the larger population and higher economic activity. Despite the high household consumption expenditure, VAT in Nigeria is relatively low, with a mean of $4.62 billion and a standard deviation of $0.84 billion. The low VAT collection suggests that Nigeria may have lower tax rates or a less effective tax system compared to Côte d'Ivoire and Ghana. PCI in Nigeria is also the highest among the three countries, averaging $2,088.50, with a standard deviation of $460.52. This suggests that income levels in Nigeria are higher, although there is still some degree of variability, reflecting income inequality. Inflation in Nigeria averages 16.64%, with a standard deviation of 14.28%, indicating high inflation and significant volatility.

From the results, there is significant economic disparity across Côte d'Ivoire, Ghana, and Nigeria in terms of household consumption, tax revenues, income levels, and inflation. While Nigeria shows the highest household consumption expenditure and per capita income, it also faces significant inflation volatility, which could undermine economic stability. Ghana, on the other hand, struggles with high inflation and low VAT collections, while Côte d'Ivoire demonstrates more stability in terms of inflation and income, despite some variability in VAT.

Panel Unit Root Test Results

The results of the panel unit root test are presented in Table 2.

Table 2: Panel Unit Root Test Results

S/N	lnHCE	lnVAT	lnPCI	INF
Harris-Tzavalis (rho)	0.1029***b	0.3728***b	0.4394***b	0.5329***a
Breitung (lambda)	-1.5476*b	-2.7758***b	-3.3867***b	-2.036**b
	-3.2704***b	1.2915	-1.1516	-12.2165***a
Im-Pesaran-Shin (Z-t-tilde-bar)	-5.0556***b	-0.2762	-2.9688***b	-4.1775***a
ADF Fisher (Modified inv. chi-squared Pm)	1.3301*b	1.8568*a	-0.7028	1.3607*b
Pesaran CD Test [t-bar test]	-4.088***b	-0.865	-2.491*b	-4.921***b
Hadri (2000) Lagrange	-0.7208b	1.8027*b	4.0095 ***	-0.2275b
Multiplier Stationarity test (z)				
Remarks	Stationarity (mixed)	Stationarity (mixed)	Stationarity (at first difference)	Stationarity (mixed)

Note: The asterisks (*** ** and *) denote rejection of the null hypothesis at the 1%, 5% and 10% levels of significance, while a and b indicate stationarity at the level and first difference, respectively.

Source: Extracts from STATA Output

The results of the panel unit root tests in Table 2 reveal that HCE and INF are generally stationary across most tests, suggesting these variables do not contain unit roots and are stable over time. PCI also shows consistent stationarity in several tests but indicates mixed results in others. Conversely, VAT exhibits mixed results, indicating it may contain unit roots and could require differencing to achieve stationarity.

Cointegrationtest Result

Table 3: Cointegrationtest Results

Kao Test Results	**Statistic**
Modified Dickey-Fuller t	-0.9576
Dickey-Fuller t	-1.1907
Augmented Dickey-Fuller t	-1.6141*
Unadjusted modified Dickey-Fuller t	-1.5507*
Unadjusted Dickey-Fuller t	-1.4573*
Pedroni Test Results	
Modified Phillips-Perron t	1.4976*
Phillips-Perron t	1.3787*
Augmented Dickey-Fuller t	2.0512**
Westerlund Test Results	
Gt	-2.827**
Ga	-8.108
Pt	-3.116
Pa	-8.151

*** p<0.01, ** p<0.05, * p<0.1.
Source: Extracts from STATA Output

The cointegration test results reveal a significant long-term equilibrium relationship among the variables. The Kao test indicates that three out of its five statistics specifically, the Augmented Dickey-Fuller (ADF) t-statistic (-1.6141), the Unadjusted modified Dickey-Fuller t-statistic (-1.5507), and the Unadjusted Dickey-Fuller t-statistic (-1.4573) are statistically significant at the 10% level. Additionally, the Pedroni test supports this result, with a significant ADF t-statistic (2.0512) at the 5% level, while the Modified Phillips-Perron (1.4976) and Phillips-Perron (1.3787) statistics also indicate supportive trends. Further validation comes from the Westerlund test, which reports a significant Gt-statistic of -2.827 at the 5% level, reinforcing the presence of cointegration. Collectively, these findings confirm a stable long-term relationship among the variables, underscoring their interconnected dynamics and long-term stability.

Average Correlation Coefficients and Pesaran CD Test

The average correlation coefficients and Pesaran cross-sectional dependence (CD) test on the series before estimation are presented in Table

Table 4: Results of Average correlation coefficients and Pesaran CD Test

Variable	**CD test**	**P-value**	**Corr**	**abs(corr)**
lnHCE	8.34	0.000	0.879	0.879
lnVAT	0.89	0.375	-0.094	0.318
lnPCI	5.99	0.000	0.632	0.632
INF	5.78	0.000	0.61	0.61

*** p<0.01, ** p<0.05, * p<0.1. Source: Extracts from STATA Output

The results from Table 4 provide the relationships between variables based on average correlation coefficients and the Pesaran CD test, which is used to detect cross-sectional dependence in panel data. For the variable household consumption expenditure (HCE), the CD test statistic is notably high at 8.34, and the corresponding p-value is 0, indicating significant cross-sectional dependence. This is further reinforced by the strong positive correlation coefficient of 0.879, suggesting that HCE is closely linked across entities (such as countries or regions) and tends to move in a similar direction. On the other hand, value-added tax (VAT) exhibits a CD test statistic of 0.89 with a p-value of 0.375, indicating no significant cross-sectional dependence. The average correlation coefficient for VAT is -0.094, signifying a weak negative relationship with other variables. The absolute correlation value of 0.318 suggests that the overall influence of VAT on the system is quite limited. For per capita income (PCI), the CD test statistic is 5.99, with a p-value of 0, confirming the presence of strong cross-sectional dependence. The correlation coefficient of 0.632 reflects a moderate positive relationship, meaning that changes in PCI are somewhat aligned across the panel, indicating that economic performance in terms of income tends to be interrelated across entities. Finally, inflation (INF) demonstrates a similar pattern to PCI, with a CD test statistic of 5.78 and a p-value of 0, suggesting significant cross-sectional dependence. The correlation coefficient of 0.610 indicates a moderate positive correlation, meaning that inflation rates across different entities are moderately synchronized. Thus, the results show that HCE, PCI, and INF exhibit strong cross-sectional dependence and moderate to strong positive correlations, implying that these variables tend to behave similarly across different entities in the panel. In contrast, VAT (lnVAT) does not show significant cross-sectional dependence and has a weak negative correlation, suggesting a more independent or localized behavior with limited interconnection to other variables.

Causality Test Results

The results of the Granger causality test are presented in Table 5.

Table 5: Granger Noncausality test Result

Causality Flow	Z.Stat	Prob. value	Decision
H0: lnVAT does not Granger-cause lnHCE	6.5844***	0.0103	Reject H_0
H0: lnHCE does not Granger-cause lnVAT	35.1569***	0.000	Reject H_0

*** p<0.01, ** p<0.05, * p<0.1.

Source: Extracts from STATA Output

The Juodis et al. (2021) Granger non-causality test was employed to ascertain the nature and direction of causality flow among the variables in the system. The results are presented in Table 5. The results indicate a bidirectional causal relationship between lnVAT and lnHCE. Specifically, the Z-statistic of 6.5844 with a p-value of 0.0103 leads to the rejection of the null hypothesis, suggesting that changes in VAT significantly predict changes in Household Consumption Expenditure (HCE). Moreover, the Z-statistic of 35.1569 with a p-value of 0.000 also leads to the rejection of the null hypothesis, indicating that changes in HCE significantly predict changes in VAT. Thus, the results imply that there is a two-way causal relationship between VAT and HCE. This suggests a dynamic interaction where both variables influence each other over time.

Hausman Test Results

The results of the Hausman test are presented in Table 6.

Table 6: Hausman Test Results

PMG Vs MG	**(b)PMG**	**(B) MG**	**(b-B) Difference**	**sqrt(diag(V_b-V_B)) S.E.**	**Chi-Square Test (Prob>chi2)**
LnVAT	-0.16853	0.146146	-0.31468	.	0.51 (0.9170)
LnPCI	3.537705	2.355133	1.182572	.	
INF	0.004642	0.01111	-0.00647	0.009349	
DFE Vs PMG	**(b)DFE**	**(B) PMG**	**(b-B) Difference**	**sqrt(diag (V_b-V_B)) S.E.**	
LnVAT	-0.14807	-0.16853	0.020457	0.128895	2.37 (0.4995)
LnPCI	3.802719	3.537705	0.265014	0.715851	
INF	0.002675	0.004642	-0.00197	0.011482	

Source: Extracts from STATA Output

The Hausman test result presented in Table 6 compares the Pooled Mean Group (PMG) estimator with the Mean Group (MG) and Dynamic Fixed Effects (DFE) estimators to determine the most efficient and consistent model for the data. The test results suggest that the PMG estimator is more appropriate, as it does not significantly differ from the alternatives but offers the advantage of capturing both short-run and long-run dynamics efficiently across heterogeneous panels. Therefore, the PMG estimator is preferred for the data analysis.

Table 7: The Analysis of the Impact of VAT on Household Consumption Expenditure

VARIABLES	**PMG (Long-Run)**	**PMG (Short-Run Côte d'Ivoire)**	**PMG (Short-Run Ghana)**	**PMG (Short-Run Nigeria)**	**Augmented Mean Group estimator**
Ec		-0.0527***	-0.142	-0.567***	
		(0.0161)	(0.104)	(0.205)	
D.llnHCE		-0.152	0.0664	0.138	
		(0.163)	(0.191)	(0.171)	
D.lnVAT		0.00378	0.0819	0.349	
		(0.00963)	(0.0691)	(0.489)	
D.lnPCI		0.0782	2.071	0.400	
		(0.157)	(1.296)	(2.610)	
D.INF		-0.00227	-0.00536**	-0.0102*	
		(0.00252)	(0.00256)	(0.00558)	
lnVAT	-0.169				-0.0426
	(0.156)				(0.0735)
lnPCI	3.538***				1.016***
	(0.479)				(0.243)
INF	-0.00464				-0.00748
	(0.0152)				(0.00625)
__000007_t					0.00588
					(0.00662)
Constant	0.604	0.175	0.248	1.388	16.82***
	(0.393)	(0.208)	(0.473)	(2.261)	(1.555)
Observations	84	84	84	84	90
Number of country	3	3	3	3	3

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Extracts from STATA Output

Long-Run PMG Estimates

The estimated coefficient for per capita income (lnPCI) in the long run is positive (3.538***) and statistically significant at the 5% level of significance. This suggests that a 1% increase in per capita income leads to a 3.54% increase in household consumption expenditure. Theoretically, this finding aligns with economic models predicting that higher income increases purchasing power and thus drives household spending. The significant and positive relationship highlights the importance of income growth in stimulating household consumption. This underscores the need for policies that promote income growth such as investment in human capital, productivity improvements, and job creation as higher incomes directly translate into increased household consumption.

The estimated long-run coefficient for VAT (-0.169) is negative but statistically insignificant at the 5% level of significance, indicating that VAT does not have a significant impact on household consumption expenditure in the long run. Theoretically, VAT, as a consumption tax, could reduce disposable income and, therefore, household consumption. However, the lack of significance suggests that the long-run effects of VAT on consumption are either muted or offset by other factors, such as tax evasion or compensatory fiscal policies (e.g., subsidies or transfers). This implies that while VAT remains an important tool for government revenue, its direct impact on household consumption may be minimal.

The long-run coefficient for inflation is negative (-0.00464) but statistically insignificant at the 5% level of significance. This suggests that inflation does not have a significant long-term effect on household consumption expenditure. Theoretically, inflation erodes purchasing power and could reduce consumption, but this result implies that households may adjust over time, mitigating the negative effects of inflation. It also indicates that inflationary pressures may be well managed in the long run, reducing their impact on consumption behavior.

Short-Run PMG Estimates

In the short run, the estimated coefficient for lagged household consumption expenditure is negative in Côte d'Ivoire (-0.152), positive in Ghana (0.0664) and Nigeria (0.138), but statistically insignificant across all three countries at the 5% level of significance. This suggests that changes in past household consumption do not significantly affect current consumption in the short run. Theoretically, this could mean that household consumption is less dependent on past consumption levels and more influenced by current economic conditions such as income, prices, or expectations. The economic implication is that households are likely adjusting their consumption decisions based on immediate circumstances rather than following rigid consumption habits.

The estimated short-run effects of VAT are positive but statistically insignificant in all three countries, with coefficients of 0.00378 (Côte d'Ivoire), 0.0819 (Ghana), and 0.349 (Nigeria). This suggests that changes in VAT do not have a significant immediate impact on household consumption expenditure. Theoretically, VAT changes might take time to be fully absorbed by consumers, or businesses might adjust prices gradually, muting the short-term effects on consumption. This implies that VAT changes are not an effective tool for influencing short-term consumption behavior.

The estimated short-run coefficients for per capita income are positive but statistically insignificant in all three countries, with the largest effect observed in Ghana (2.071), followed by Nigeria (0.400) and Côte d'Ivoire (0.0782). This indicates that short-term changes in

income do not have a significant immediate effect on household consumption expenditure. Theoretically, this could be due to the fact that households may smooth their consumption over time, adjusting only gradually to changes in income. This suggests that short-term income fluctuations are not as crucial to immediate consumption decisions as long-term income growth.

In the short run, inflation has significant negative effects on household consumption expenditure in Ghana (-0.00536**) and Nigeria (-0.0102*), but is statistically insignificant in Côte d'Ivoire. This suggests that inflation reduces household consumption in the short term by eroding purchasing power, particularly in Ghana and Nigeria. The significance of the short-run inflation coefficients shows the immediate impact of price instability on household consumption decisions. This implies that inflation control is crucial for maintaining stable consumption levels in the short term. High inflation can severely reduce households' real income, leading to lower consumption. For Ghana and Nigeria, this finding emphasizes the need for effective monetary and fiscal policies to curb inflation and protect household spending power. In Côte d'Ivoire, where inflation is not statistically significant, inflation may be better managed, reducing its short-term impact on consumption.

The error correction term is negative and significant for Côte d'Ivoire (-0.0527***), implying that any short-run deviations from the long-run equilibrium in household consumption expenditure are corrected over time. However, the magnitude of this coefficient suggests a slow adjustment process, where only 5.27% of the deviation is corrected each year. In contrast, the error correction term for Nigeria (-0.567***) is much larger and also statistically significant at the 5% level of significance, indicating a much faster adjustment process. Ghana's error correction term (-0.142) is negative but not statistically significant, suggesting a weak adjustment process in that country. The economic implication is that Nigeria demonstrates a strong ability to return to equilibrium after short-term shocks, likely due to more dynamic economic policies or greater flexibility in household consumption patterns. In Côte d'Ivoire, however, the slow adjustment speed may indicate structural rigidities or a less responsive economy, meaning that economic shocks could have more persistent effects on household consumption. For Ghana, the weak adjustment could suggest that external shocks in household consumption are less likely to correct naturally, requiring stronger policy intervention to stabilize consumption.

Augmented Mean Group (AMG) Results

The AMG estimator provides an alternative perspective by allowing for heterogeneity across countries. The AMG results show a strong positive effect for per capita income (1.016***), suggesting that income is a significant determinant of household consumption when accounting for country-specific factors. The constant term (16.82***) is also highly significant, indicating strong country-specific effects, which could represent structural differences in consumption behavior across the countries. Thus, the PMG results, particularly in the long run, provide strong evidence that per capita income is the most significant driver of household consumption expenditure, with a large and highly significant coefficient. This explains the importance of per capita income in sustaining household consumption in the long term. Short-run results reveal that inflation control is crucial, especially in Ghana and Nigeria, where it significantly affects consumption. Therefore, the study emphasizes the critical role of income growth in driving household consumption, while inflation control is necessary to

ensure short-term stability in consumption patterns. The Augmented Mean Group results confirm these findings while accounting for country-specific effects, reinforcing the idea that income growth and inflation management should be central to economic policy.

5. Conclusion and Policy Recommendations

The findings of the study reveal that the long-run effect of VAT on household consumption is negative but statistically insignificant, indicating that VAT does not have a significant impact on household consumption expenditure in the long run. The study also showed a significant bidirectional causal relationship between Value-Added Tax (VAT) and household consumption expenditure (HCE). This indicates that changes in VAT not only influence household consumption but that household consumption patterns also affect VAT revenues. This dynamic interaction explains the importance of VAT policies in shaping consumption behavior over time.

To effectively address these findings, several policy recommendations are necessary. First, promoting sustainable per capita income growth should be a top priority, as higher income levels directly lead to increased household consumption. Governments of West African countries, in collaboration with private sector stakeholders, should implement policies that encourage job creation, investment in education, and skills development to enhance labor productivity, stimulate household incomes, and increase consumption.

Moreover, VAT policies in ECOWAS countries need to be carefully calibrated to balance revenue generation with the potential adverse effects on household consumption. Ministries of Finance and tax authorities should consider reducing VAT rates on essential goods and services, complementing VAT policies with compensatory fiscal measures such as targeted subsidies or cash transfers.

Finally, controlling inflation, particularly in Ghana and Nigeria, and addressing structural rigidities in Côte d'Ivoire, are crucial for ensuring economic resilience and stable household consumption levels over time.

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