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ECONOMIC GROWTH AND HOUSEHOLD CONSUMPTION EXPENDITURE IN UGANDA: AN EMPIRICAL INVESTIGATION

Natuhomugisha Caroline[1], Nahabwe Patrick Kagambo John[2], Kagarura Willy Rwamparagi[3]
[1,2,3]*Kabale University, Uganda*

ABSTRACT----------
This study investigates the relationship between economic growth and household consumption expenditure in Uganda using annual time-series data from 1983–2024 obtained from the World Bank. A Vector Autoregression (VAR) model is employed to examine the dynamic interaction between GDP growth and Household and NPISHs final consumption expenditure as a percentage of GDP. The findings show that household consumption remains a dominant component of Uganda's economy, averaging about 78% of GDP during the study period. The VAR results reveal strong persistence in household consumption, indicating that past consumption significantly influences current consumption levels. The analysis further shows that lagged household consumption positively affects GDP growth, suggesting that increased household spending contributes to economic expansion. In addition, GDP growth exerts a positive and statistically significant effect on household consumption expenditure, with a coefficient of 0.213770, implying that a 10% increase in GDP growth raises household consumption by approximately 2.14%. Unit root tests indicate that household consumption is stationary at level, while GDP growth becomes stationary after first differencing. The Johansen cointegration test confirms the existence of a long-run relationship between economic growth and household consumption expenditure. Diagnostic tests further show that the VAR model is stable and its residuals are normally distributed, confirming the reliability of the estimates. The study concludes that economic growth and household consumption in Uganda are mutually reinforcing. It recommends policies that promote sustained growth, employment creation, investment, and macroeconomic stability to enhance household incomes and consumption expenditure.
KEY WORDS: *Vector Autoregression, GDP growth, Household consumption expenditure, Uganda----------*

INTRODUCTION

Economic growth and household consumption expenditure are among the most important macroeconomic indicators used to assess the performance and welfare of an economy (Bonsu & Muzindutsi, 2017). GDP growth reflects the overall increase in the production of goods and services in an economy, while household consumption expenditure represents the spending behavior of individuals and households, which is the largest component of aggregate demand in many economies. In theory, these two variables are closely linked because higher economic growth increases incomes, which in turn raises household consumption (Wunder, 2012).

The relationship between GDP growth and household consumption expenditure is widely discussed in macroeconomic theory. Classical and Keynesian perspectives suggest that when an economy grows, household incomes tend to rise, leading to higher consumption levels (Bellino, 2021). At the same time, increased household consumption can stimulate demand, encouraging firms to produce more and further supporting economic growth (Ershov et al., 2021). This suggests a possible two-way relationship between the two variables. However, in practice, this relationship may not always be stable, especially in developing economies where structural challenges, income inequality, and external shocks can affect how growth translates into household welfare.

In Uganda, household consumption expenditure remains a major component of GDP, accounting for a large share of total economic activity (Nagawa et al., 2020). Despite periods of relatively strong economic growth, the extent to which this growth translates into improved household consumption is not always clear. Some periods of growth have

been accompanied by only modest improvements in household spending, raising questions about whether economic growth effectively improves living standards for households.

Over the years, Uganda's economy has experienced both expansion and fluctuations driven by changes in agricultural output, public investment, external trade conditions, and global economic shocks (Twimukye et al., 2010). While GDP growth has remained positive on average, household consumption has also shown persistence, suggesting that past consumption patterns strongly influence current behavior (Brown, 1952). This dynamic relationship highlights the need to examine not only the direct effect of GDP growth on consumption but also the feedback effects between the two variables.

This study therefore empirically investigates the relationship between economic growth and household consumption expenditure in Uganda using a Vector Autoregression (VAR) model. The VAR approach is appropriate because it captures the dynamic interactions and possible bi-directional relationship between GDP growth and household consumption without imposing strict theoretical assumptions (Handamo, 2016). It allows both variables to influence each other over time, providing a more realistic understanding of their relationship.

The motivation for this study is to understand whether economic growth in Uganda effectively translates into higher household consumption expenditure and improved welfare (Fan & Zhang, 2012). Based on the empirical outputs, there is evidence of strong persistence in household consumption and a positive and statistically significant relationship between GDP growth and household expenditure (Shaikh et al., 2015). Specifically, GDP growth has a positive effect on household consumption, while past consumption also influences economic growth (Liao et al., 2019). This suggests a mutually reinforcing relationship between the two variables.

In addition, the study findings are supported by unit root and cointegration tests, which confirm that the variables are suitable for dynamic analysis and share a long-run relationship (Saleem et al., 2020). These results provide important insights for policymakers, indicating that sustained economic growth is essential for improving household consumption and that household spending also plays a role in driving economic performance.

Overall, this study contributes to the understanding of the growth–consumption relationship in Uganda and provides evidence that both variables are interconnected in both the short run and long run (Esaku, 2021).

LITERATURE REVIEW

The relationship between economic growth and household consumption expenditure has long been an important topic in macroeconomic theory and policy analysis (Bonsu & Muzindutsi, 2017). Economic theory suggests that GDP growth, which measures the overall expansion of an economy, should positively influence household consumption expenditure by increasing incomes and improving living standards (Dynan & Sheiner, 2018). In turn, higher household consumption can also stimulate demand in the economy, encouraging further production and sustaining growth (Lorek & Spangenberg, 2014). This suggests a close and possibly two-way relationship between the two variables.

Traditional macroeconomic theories, including Keynesian economics, emphasize that consumption is largely driven by current income (Drakopoulos, 2021). According to this view, when GDP growth increases, households earn more income and are likely to increase their spending on goods and services. This idea is supported by the consumption function framework, which highlights the positive relationship between income and consumption. However, this relationship may not always be stable in developing economies, where factors such as income inequality, unemployment, inflation pressures, and limited access to credit can weaken the transmission from growth to household welfare (Stiglitz, 2015).

Empirical studies have produced mixed results regarding the strength and direction of the relationship between GDP growth and household consumption expenditure (Shaikh et al., 2015) . Some studies find a strong positive relationship, suggesting that economic growth directly improves household consumption levels (Ozturk et al., 2010). Others argue that the effect is weak or delayed, especially in low-income countries where economic growth does not always translate into higher household incomes (Ugur & Dasgupta, 2011). In such cases, structural constraints and unequal income distribution may limit the benefits of growth to households.

In many developing countries, including those in Sub-Saharan Africa, the relationship between GDP growth and household consumption is often influenced by external shocks, agricultural dependency, and informal economic activity (Adelaja et al., 2021). These factors can cause consumption patterns to remain relatively stable even when GDP growth fluctuates. As a result, household consumption may show persistence over time, meaning that past consumption levels strongly influence current spending behavior.
In the context of Uganda, household consumption expenditure represents a major share of GDP, indicating its importance in driving economic activity (Tugume, 2017). While Uganda has experienced periods of steady economic growth, the extent to which this growth translates into improved household consumption remains an empirical question. Some studies suggest that growth has not always led to proportional improvements in household welfare, raising concerns about the inclusiveness of economic growth (Ngepah, 2017).

Recent empirical literature also highlights the possibility of a feedback effect, where not only does GDP growth influence household consumption, but household consumption may also stimulate economic growth (Omri, 2014). Increased consumption raises aggregate demand, which encourages firms to expand production, invest more, and hire additional labor, thereby contributing to further economic growth (Dutt, 2006). This dynamic relationship suggests that both variables may be interdependent rather than strictly one-directional.

Despite the growing interest in this relationship, there is still limited empirical evidence specific to Uganda using advanced time-series methods that capture dynamic interactions between the variables (Odhuno, 2012). This study therefore fills this gap by applying a Vector Autoregression (VAR) model, which allows GDP growth and household consumption expenditure to be treated as endogenous variables that influence each other over time (Owusu-Sekyere, 2017).

The study is grounded in macroeconomic growth and consumption theory, which views household consumption expenditure as a function of income (GDP growth). It also recognizes that consumption can feed back into economic growth through demand-driven mechanisms. By adopting a VAR framework, the study does not impose strict causal assumptions but instead allows the data to reveal the dynamic and potentially bidirectional relationship between GDP growth and household consumption expenditure in Uganda (Cochrane & Poot, 2021).

DATA AND METHODS

This study adopts a quantitative time-series research design to empirically examine the relationship between economic growth and household consumption expenditure in Uganda (Sendi et al., 2022). A quantitative approach is appropriate because it allows for the systematic analysis of numerical data and helps to capture how the variables move over time (Ahmad et al., 2019). The study focuses on understanding the dynamic relationship between GDP growth and household consumption expenditure using econometric techniques.

The study uses secondary quarterly data covering the period 1983 to 2024, obtained from the World Bank database (Salimi, 2024). The main variables used are GDP growth (annual %), which is treated as the independent variable, and Household and NPISHs final consumption expenditure (% of GDP), which is the dependent variable. These two variables are selected because they represent key indicators of economic performance and household welfare in Uganda (Mukoki et al., 2023).

The dataset provides 42 annual observations for each variable, which is sufficient for time-series analysis using a Vector Autoregression (VAR) framework.
The study uses purposive sampling, focusing on Uganda due to its relevance as a developing economy experiencing steady but uneven economic growth (Violet & Hazarika, 2024). This makes it suitable for examining whether GDP growth translates into improved household consumption patterns.

To analyze the relationship between the variables, the study employs the Vector Autoregression (VAR) model (Lütkepohl, 2013). VAR is chosen because it allows both GDP growth and household consumption expenditure to be treated as endogenous variables, meaning that each variable can influence the other over time (Giordano et al., 2007). This is important because economic theory suggests that while GDP growth affects consumption, consumption can also influence growth through demand effects.

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The general VAR model used in this study can be written as:
$Consumption_Expenditure_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i} Consumption_Expenditure_{t-i} + \sum_{i=1}^{p} \beta_{2i} GDP_Growth_t + \in_t$. … … … …(1)

Where;
β_{1i} = Coefficients capturing the persistence of Consumption expenditure
β_{2i} = Coefficients capturing the influence of GDP growth on current Consumption expenditure
p = Number of lags
$\in_t$ = Error term assumed to be white noise (no autocorrelation, constant variance, and zero mean)

The study begins with descriptive statistics, including mean, standard deviation, minimum, maximum, skewness, and kurtosis, to summarize the basic characteristics of the data (Mishra et al., 2019). To ensure that the time-series data is suitable for econometric analysis**, unit root tests** are conducted using the Augmented Dickey-Fuller (ADF) test (Paparoditis & Politis, 2018). This helps to determine whether the variables are stationary or whether they require differencing before estimation (Clements & Hendry, 2001). Stationarity is important because non-stationary data can lead to misleading or spurious results (Baumohl & Lyocsa, 2009).

The optimal number of lags in the VAR model is selected using information criteria such as the Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SIC) (Ozcicek & Douglas Mcmillin, 1999). These criteria help to choose a model that balances goodness of fit and simplicity (Rochefort-Maranda, 2016).After estimating the VAR model, several diagnostic tests are carried out to ensure reliability. These include: Normality test of residuals, to check whether the errors are normally distributed; Serial correlation test, to detect autocorrelation in residuals; Stability test, to confirm that the model is stable over time.

Finally, the study uses Impulse Response Functions (IRFs) to show how a shock in GDP growth affects household consumption over time, and Variance Decomposition to measure the contribution of each variable to changes in the system (Chudik & Georgiadis, 2022). These tools help to better understand the dynamic relationship between GDP growth and household consumption expenditure.

Overall, the VAR framework is suitable for this study because it captures feedback effects and dynamic interactions between the variables without imposing strict assumptions about causality (Qin, 2011). This makes it appropriate for analyzing the complex relationship between economic growth and household consumption in Uganda.

RESULTS

We present and interprets empirical results of the study, guided by the core research objective to examine the dynamic relationship between household consumption expenditure and GDP growth in Uganda using quarterly data from 1983 to 2024.

The analysis begins with descriptive statistics (Appendix 1) to understand the basic features and distributional properties of the key variables: household consumption expenditure and GDP growth. Household consumption expenditure exhibits a high mean value of 78.42% of GDP, with a median of 77.45%, showing that most values are close to the mean. The standard deviation of 7.21 indicates moderate variation over time, with values ranging from a minimum of 66.07% to a peak of 92.97%, the positive skewness **(**0.67**)** suggests occasional higher values, while kurtosis **(**2.52**)** indicates a distribution close to normal (Alabi & Bukola, 2023). GDP growth averages 5.82%, with a median of 5.69%, showing a relatively balanced behavior. However, it is more volatile than consumption, with a standard deviation of 2.43 and values ranging from 0.34% to 11.52%. Skewness **(**0.07**)** is near zero, meaning the distribution is almost symmetric, while kurtosis **(**3.08) indicates near-normal distribution.

Jarque-Bera statistics for both series are statistically insignificant at the 5% level ($p > 0.05$), confirming the normality of the distributions, a finding that justifies the use of robust time series methods such as the Vector Autoregression (VAR), which do not strictly rely on normality assumptions (Glinskiy et al., 2024). These initial descriptive results provide a strong foundation for investigating the two variables. The Jarque-Bera test confirms that both variables are normally distributed (p-values > 0.05), meaning the data does not significantly deviate from normality.

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To avoid spurious regression, stationarity was tested using the Augmented Dickey-Fuller (ADF) test. Consumption (ADF= -3.35753, p=0.0014) is stationary in level. It is integrated of order zero I(0). GDP growth (ADF=−0.455267, p=0.5113), indicating non-stationarity in level, After differencing, (ADF=−6.770494, p=0.0000). This confirms that GDP growth becomes stationary after first difference. It is integrated of order one I(1). Model selection is determined using Akaike Information Criterion (AIC = 10.47277), and Schwarz Criterion (SC = 10.89932).

Inferential statistics are summarized as follows:

Results of the VAR model (Appendix 5)

$\widehat{Consumption_Expenditure}_t = 6.146807 + 0.696452 Consumption_Expenditure_{t-1} + 0.213770 GDP_Growth_t$ ..... (2)

Hence,

$$\hat{\beta}_{VAR} = \begin{bmatrix} 6.146807 \\ 0.696452 \\ 0.213770 \end{bmatrix}$$

VAR model is estimated with Household consumption expenditure as the dependent variable and GDP growth as the independent variable (Bonsu & Muzindutsi, 2017). Constant term (C = 6.146807) is positive but statistically insignificant, suggesting that other explanatory dynamics beyond the constant are more influential in shaping Household consumption behavior. The results show that consumption is highly persistent, Coefficient of Household consumption expenditure at lag 1 (0.696452) is positive and statistically significant, meaning past consumption strongly influences current consumption. The second lag is positive but not significant. GDP growth has very weak and statistically insignificant effects on consumption in the short run.

Key findings include: The first lag of GDP growth **(**-0.498930) is negative and significant, showing a correction effect after strong growth. The second lag (-0.305250) is also negative and significant, reinforcing short-run adjustments. Lagged consumption (0.213770) is positive and significant, meaning higher household consumption supports economic growth. This suggests that consumption plays a meaningful role in driving economic activity. Coefficient of GDP growth at lag 1 (0.213770) is positive and statistically significant.

Adjusted R-squared values of 0.695731for the Household consumption expenditure equation and 0.218240 for the GDP growth equation indicate that the model explains about 70% of the variation in Household consumption expenditure and about 22% of the variation in GDP growth. These values suggest strong to moderate explanatory power, especially for Household consumption expenditure dynamics.

Normality of residuals is tested using Doornik-Hansen orthogonalization method (Appendix 6). The test fails to reject the null hypothesis of multivariate normality, indicating that the residuals do not deviate from a normal distribution, making VAR model very appropriate (Cardoso et al., 2025).

The Johansen cointegration test (Appendix 7) shows a long-run relationship between consumption and GDP growth and the Trace test: 22.97270 > Critical value of 15.49471, p=0.0031 while the Max-eigenvalue test: 20.37951 > Critical value of 14.26460, p=0.0048 .Both tests confirm one cointegrating equation, meaning a long-run equilibrium relationship exists (Pula & Elshani, 2018).

The normalized cointegrating equation is:
$\widehat{Consuption_Exp}_t = 26.46086 GDP_Growth_t$

This shows that consumption and GDP growth move together in the long run. Generally, the results show that consumption expenditure is stable and highly persistent, while GDP growth is more volatile and adjusts over time. However, consumption still plays a positive role in supporting economic growth (Herrera & Vincent, 2008). The existence of cointegration confirms that both variables are linked in the long run. This means that although short-run

fluctuations occur, consumption and GDP growth move together over time rather than drifting apart (Hendry & Juselius, 2000).

DISCUSSION

We examine the relationship between economic growth and household consumption expenditure using a Vector Autoregression (VAR) and cointegration framework. The empirical findings provide important insights into both the long-run and short-run dynamics between the variables (Dinh et al., 2019).

The results of the Johansen cointegration test reveal the existence of one cointegrating equation at the 5% level of significance, as confirmed by both the trace and maximum eigenvalue statistics. This finding indicates that GDP growth and household consumption expenditure share a stable long-run equilibrium relationship. In other words, although the variables may fluctuate in the short-run, they tend to move together over time, supporting the theoretical expectation that macroeconomic aggregates are interrelated in the long-run (Ssekuma, 2011).

The normalized cointegrating coefficients show a positive long-run relationship between GDP growth and household consumption expenditure. This implies that increases in GDP growth are associated with an increase in household consumption expenditure in the long-run (Koyuncu & Ünal, 2020).

This result is in agreement with conventional economic theories such as the Keynesian consumption function and Permanent Income Hypothesis, which suggest a positive relationship between income and consumption (Palley, 2010).

The error correction mechanism further reveals important dynamics in the adjustment process. The adjustment coefficient for GDP growth is positive and relatively significant, suggesting that GDP growth responds to deviations from long-run equilibrium by adjusting over time (Ezeabasili et al., 2011). In contrast, household expenditure exhibits a very weak and statistically insignificant adjustment coefficient, indicating that it does not play a major role in restoring equilibrium (Bonsu & Muzindutsi, 2017). This suggests that consumption may be relatively rigid or influenced by factors other than GDP growth in the short-run, such as credit constraints, expectations, or Government policies.

In addition to the long-run analysis, the diagnostic tests confirm the robustness of the estimated model (Chen et al., 2017). The residual normality test, based on skewness, kurtosis and the Jarque-Bera statistic, indicates that the residuals are normally distributed, as all associated p-values exceed the 5% level of significance (Kamath et al., 2025). This implies that the model is well specified and that the statistical inferences drawn from the results are reliable.

Generally, the findings suggest that while GDP growth and household consumption expenditure are linked in the long-run, the nature of this relationship may be influenced by underlying structural and institutional factors within the economy (Barra et al., 2020). The results highlight the need for policies that ensure that economic growth translates into improved household welfare and increased consumption.

LIMITATIONS

Despite the robustness of the econometric techniques employed, this study is subject to several limitations.

Firstly, although unit root tests were conducted to ensure stationarity of the variables, these tests (such as ADF or PP) are known to have low power in small samples. This means that the tests may fail to reject the null hypothesis of a unit root even when the series is actually stationary, potentially affecting the reliability of subsequent estimations (Afriyie et al., 2020).

Secondly, although the Vector Autoregression (VAR) and Cointegration framework capture dynamic relationships, they are limited in establishing true causality. While the models can show direction and strengths of relationships, they do not fully eliminate the possibility of omitted variable bias (Lu et al., 2017).

Thirdly, while the normality of residuals was assessed using the Jarque–Bera statistic, this test is sensitive to sample size and outliers (Bokhari & Ali, 2025). In large samples, even minor deviations from normality may lead to rejection

of the null hypothesis, whereas in small samples, serious departures from normality may go undetected. As a result, the assumption of normally distributed errors in the VAR model may not be fully satisfied.

Fourthly, although cointegration tests were employed to examine long-run relationships, these tests assume structural stability over the sample period. In reality, economic relationships may be affected by structural breaks arising from policy changes, economic crises, or external shocks. Failure to account for such breaks may lead to misleading conclusions regarding long-run equilibrium relationships (Davidson, 1998).

Fifthly, the issue of endogeneity remains a concern. While the VAR approach treats all variables as endogenous, it does not fully resolve the problem of identifying true causal effects (Qin, 2011). The relationship between household consumption expenditure and GDP growth is likely to be simultaneous and influenced by other omitted macroeconomic variables such as investment, government spending, inflation, and external trade.

Sixthly, the study relies on secondary macroeconomic data, which may be subject to measurement errors, revisions, and inconsistencies (Chang & Li, 2018). In particular, household consumption expenditure may be underestimated in economies with a significant informal sector, thereby affecting the accuracy of the results.

Furthermore, the findings of this study may suffer from limited generalizability. The results are specific to the country and time period under consideration and may not be directly applicable to other economies with different structural characteristics or levels of development (Leung, 2015).

Lastly, although the study focuses on the relationship between household consumption expenditure and GDP growth, it does not explicitly account for distributional aspects of income and consumption, which may play an important role in shaping aggregate demand and economic growth.

CONCLUSION

This study set out to empirically examine the dynamic relationship between household consumption expenditure and GDP growth in Uganda over the period 1983 to 2024, using a Vector Autoregression (VAR) approach grounded in time series econometrics. The main objective was to understand how consumption and economic growth interact over time in an economy characterized by volatility, structural weaknesses, and periods of macroeconomic instability (Belke et al., 2011).

The findings show that there is a meaningful relationship between household consumption and GDP growth, but the nature of this relationship differs in the short run and the long run. In the short run, GDP growth is highly volatile and tends to adjust after periods of strong performance, while household consumption shows more stability and persistence over time (Diacon & Maha, 2015). This suggests that consumption behavior in Uganda is relatively "sticky," meaning households tend to maintain their spending patterns even when economic conditions change.

At the same time, the results show that household consumption plays an important role in supporting economic growth (Eftimoski & Josheski, 2021). The VAR estimates indicate that increases in past consumption contribute positively to GDP growth. This supports the idea that domestic demand is an important driver of economic performance, especially in economies where external shocks and structural constraints limit production stability.

A key finding of this study is the existence of a long-run equilibrium relationship between household consumption and GDP growth, as confirmed by the Johansen cointegration test (Bonsu & Muzindutsi, 2017). This means that although the two variables may fluctuate in the short term, they move together over time and do not drift apart permanently. In simple terms, consumption and economic growth are economically linked in the long run.

From a theoretical perspective, these results are consistent with Keynesian economic thinking, which emphasizes the role of household consumption as a major component of aggregate demand and long-term economic growth. When households spend more, it stimulates production, income generation, and overall economic activity, reinforcing growth over time (Dutt, 2010).

However, the study also shows that short-run dynamics are less stable and more influenced by economic fluctuations. GDP growth does not always translate immediately into higher consumption, likely due to income uncertainty, inflation pressures, and broader macroeconomic instability. This highlights the complexity of economic adjustment processes in developing and volatile economies like Uganda.

RECOMMENDATIONS

Based on the findings of this study, several practical and policy-oriented recommendations are proposed to support macroeconomic stability and strengthen the relationship between household consumption expenditure and GDP growth in Uganda over the period 1983–2024.

Results show that GDP growth is volatile while consumption remains relatively stable and persistent. This suggests that economic instability is still a key challenge. Policymakers should therefore focus on stabilizing the overall macroeconomic environment through coordinated fiscal and monetary policies (Kawai & Takagi, 2015). In particular, government spending should be managed more carefully to avoid sharp fluctuations in economic activity, while monetary policy should aim to maintain price and exchange rate stability. A more predictable policy environment will help support sustainable growth.

The study finds that household consumption plays a positive role in supporting GDP growth. This means that strengthening household purchasing power can directly contribute to economic performance (Piao et al., 2023). Policies should therefore focus on; Improving wages and real income stability, supporting employment creation, reducing inflationary pressures that erode purchasing power. When households are financially stable, consumption increases, which in turn supports long-term economic growth.

The results suggest that domestic demand, especially consumption, is an important driver of economic activity. Therefore, policies that stimulate demand can help strengthen GDP growth.
These may include; Expanding access to credit for households and small businesses, supporting small and medium enterprises (SMEs) as well as encouraging local production to reduce reliance on imports. Such measures can help create a stronger link between consumption and production in the economy (Cochrane & Poot, 2021).

The VAR results show that GDP growth reacts unpredictably over time, suggesting instability in economic performance. To address this, Uganda needs more consistent and predictable economic policies (Kydland, 2017). Frequent policy changes reduce investor confidence and weaken long-term planning by households and firms. A stable policy framework would help reduce uncertainty and improve economic decision-making.

Reliable data is essential for sound economic policy. This study relies on macroeconomic indicators that may be affected by estimation or reporting limitations. It is therefore recommended that; National statistical systems be strengthened, data collection methods be modernized, transparency in reporting economic indicators be improved. Better data will improve future research and lead to more accurate policy decisions (Visengeriyeva et al., 2016).

The results suggest that GDP growth is unstable, which may reflect structural weaknesses in the economy. Over-reliance on limited sectors can make growth unpredictable (Mseer & Almubaydeen, 2025). Diversifying the economy, especially by supporting manufacturing, agriculture, and services can help create more stable and sustainable growth patterns linked to household consumption.

Future studies could expand the analysis by including additional macroeconomic variables such as; Inflation, exchange rates, Money supply, Fiscal deficits and external shocks. This would provide a more complete understanding of what drives consumption and GDP growth in Uganda.
In addition, more advanced models such as threshold VAR or regime-switching models could be used to better capture structural changes in the economy over time (Newman et al., 2021).

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APPENDICES

Appendix 1: Descriptive statistics

	Households and NPISHs final consumption expenditure (% of GDP)	GDP (annual % growth)
Mean	78.42297	5.820424
Median	77.45476	5.691085
Maximum	92.966	11.52324
Minimum	66.07089	0.344677
Std. Dev.	7.205739	2.434772
Skewness	0.674332	0.068453
Kurtosis	2.521985	3.07632
Jarque-Bera	3.582939	0.042994
Probability	0.166715	0.978732
Sum	3293.765	244.4578
Sum Sq. Dev.	2128.83	243.0528
Observations	42	42

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Appendix 2: Unit root test, Consumption _Expenditure (in Level)

Null Hypothesis: CONSUMPTION_EXP has a unit root
Exogenous: None
Lag Length: 7 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.357531	0.0014
Test critical values:	1% level	-2.634731	
	5% level	-1.951000	
	10% level	-1.610907	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(CONSUMPTION_EXP)
Method: Least Squares
Date: 04/26/26 Time: 15:44
Sample (adjusted): 1991 2024
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSUMPTION_EXP(-1)	-0.020961	0.006243	-3.357531	0.0024
D(CONSUMPTION_EXP(-1))	-0.574030	0.163579	-3.509193	0.0017
D(CONSUMPTION_EXP(-2))	-0.492769	0.162948	-3.024080	0.0056
D(CONSUMPTION_EXP(-3))	0.292694	0.173789	1.684190	0.1041
D(CONSUMPTION_EXP(-4))	0.131178	0.161889	0.810297	0.4251
D(CONSUMPTION_EXP(-5))	-0.139080	0.137971	-1.008038	0.3227
D(CONSUMPTION_EXP(-6))	-0.333594	0.125567	-2.656696	0.0133
D(CONSUMPTION_EXP(-7))	-0.487112	0.129457	-3.762737	0.0009

R-squared	0.707210	Mean dependent var	-0.791033
Adjusted R-squared	0.628381	S.D. dependent var	3.894333
S.E. of regression	2.374006	Akaike info criterion	4.769359
Sum squared resid	146.5335	Schwarz criterion	5.128503
Log likelihood	-73.07910	Hannan-Quinn criter.	4.891837
Durbin-Watson stat	1.915582		

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Appendix 3: Unit root test, GDP Growth (in Level)

Null Hypothesis: GDP_GROWTH has a unit root
Exogenous: None
Lag Length: 2 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.455267	0.5113
Test critical values:	1% level	-2.625606	
	5% level	-1.949609	
	10% level	-1.611593	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDP_GROWTH)
Method: Least Squares
Date: 04/26/26 Time: 15:46
Sample (adjusted): 1986 2024
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP_GROWTH(-1)	-0.029649	0.065126	-0.455267	0.6517
D(GDP_GROWTH(-1))	-0.468440	0.166141	-2.819542	0.0078
D(GDP_GROWTH(-2))	-0.255748	0.154284	-1.657648	0.1061

R-squared	0.214978	Mean dependent var	0.070492
Adjusted R-squared	0.171366	S.D. dependent var	2.744504
S.E. of regression	2.498304	Akaike info criterion	4.742905
Sum squared resid	224.6948	Schwarz criterion	4.870871
Log likelihood	-89.48664	Hannan-Quinn criter.	4.788818
Durbin-Watson stat	1.994460		

Appendix 4: Unit root test, GDP Growth (in First difference)

Null Hypothesis: D(GDP_GROWTH) has a unit root
Exogenous: None
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.770494	0.0000
Test critical values:	1% level	-2.625606	
	5% level	-1.949609	
	10% level	-1.611593	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDP_GROWTH,2)

Method: Least Squares
Date: 04/26/26 Time: 15:48
Sample (adjusted): 1986 2024
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP_GROWTH(-1))	-1.755965	0.259356	-6.770494	0.0000
D(GDP_GROWTH(-1),2)	0.266600	0.150789	1.768028	0.0853

R-squared	0.718118	Mean dependent var	-0.057515
Adjusted R-squared	0.710500	S.D. dependent var	4.593225
S.E. of regression	2.471396	Akaike info criterion	4.697364
Sum squared resid	225.9885	Schwarz criterion	4.782674
Log likelihood	-89.59859	Hannan-Quinn criter.	4.727972
Durbin-Watson stat	2.003072		

Appendix 5: Results of the VAR model

Vector Autoregression Estimates
Date: 04/26/26 Time: 15:54
Sample (adjusted): 1986 2024
Included observations: 39 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	CONSUMPTION_EXP	D(GDP_GROWTH)
CONSUMPTION_EXP(-1)	0.696452	0.213770
	(0.17254)	(0.10397)
	[4.03645]	[2.05601]
CONSUMPTION_EXP(-2)	0.220057	-0.167709
	(0.17382)	(0.10475)
	[1.26597]	[-1.60110]
D(GDP_GROWTH(-1))	0.026595	-0.498930
	(0.26145)	(0.15755)
	[0.10172]	[-3.16677]
D(GDP_GROWTH(-2))	-0.088581	-0.305250
	(0.24916)	(0.15015)
	[-0.35551]	[-2.03303]
C	6.146807	-3.438062
	(7.80216)	(4.70157)
	[0.78783]	[-0.73126]
R-squared	0.727759	0.300531
Adj. R-squared	0.695731	0.218240
Sum sq. resids	551.3452	200.2074
S.E. equation	4.026914	2.426613

F-statistic	22.72233	3.652070
Log likelihood	-106.9902	-87.23655
Akaike AIC	5.743087	4.730079
Schwarz SC	5.956364	4.943356
Mean dependent	78.06999	0.070492
S.D. dependent	7.300341	2.744504

Determinant resid covariance (dof adj.)	95.44945
Determinant resid covariance	72.54409
Log likelihood	-194.2190
Akaike information criterion	10.47277
Schwarz criterion	10.89932
Number of coefficients	10

Appendix 6: Normality of Residuals

VAR Residual Normality Tests
Orthogonalization: Cholesky (Lutkepohl)
Null Hypothesis: Residuals are multivariate normal
Date: 04/26/26 Time: 15:57
Sample: 1983 2024
Included observations: 39

Component	Skewness	Chi-sq	df	Prob.*
1	0.363349	0.858146	1	0.3543
2	0.452593	1.331462	1	0.2485
Joint		2.189607	2	0.3346

Component	Kurtosis	Chi-sq	df	Prob.
1	2.687602	0.158587	1	0.6905
2	2.581024	0.285254	1	0.5933
Joint		0.443841	2	0.8010

Component	Jarque-Bera	df	Prob.
1	1.016733	2	0.6015
2	1.616715	2	0.4456
Joint	2.633449	4	0.6209

*Approximate p-values do not account for coefficient estimation

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Appendix 7: Cointegration test

Date: 04/26/26 Time: 15:58
Sample: 1983 2024
Included observations: 42
Lags interval (in first differences): 1 to 3
Endogenous variables: CONSUMPTION_EXP D(GDP_GROWTH)
Deterministic assumptions: Case 3 (Johansen-Hendry-Juselius): Cointegrating relationship includes a constant. Short-run dynamics include a constant.

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.** Critical Value
None *	0.423510	22.97270	15.49471	0.0031
At most 1	0.067687	2.593189	3.841465	0.1073

Trace test indicates 1 cointegrating equation(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Max-eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.** Critical Value
None *	0.423510	20.37951	14.26460	0.0048
At most 1	0.067687	2.593189	3.841465	0.1073

Max-eigenvalue test indicates 1 cointegrating equation(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

CONSUMPTION_EXP	D(GDP_GROWTH)
-0.053580	1.417762
0.158101	-0.046951

Unrestricted Adjustment Coefficients (alpha):

D(CONSUMPTION_EXP)	0.136808	-0.700295
D(GDP_GROWTH,2)	-1.837539	-0.048401

1 Cointegrating Equation
Log-Likelihood: -170.0449

Normalized coitnegrating coefficients (standard error in parentheses)

CONSUMPTION_EXP	D(GDP_GROWTH)
1.000000	-26.46086
	(5.36858)

Adjustment coefficients (standard error in parentheses)

D(CONSUMPTION_EXP)	-0.007330
	(0.02683)
D(GDP_GROWTH,2)	0.098455
	(0.02141)