

Economic Determinants of Household Consumption Expenditures in West Africa: A Case Study of Nigeria and Ghana

By

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Abstract

This paper examined the economic determinants of household consumption expenditures in the West African sub-region with special emphasis on Nigeria and Ghana. Data for the study were obtained from the World Bank database for the period 1999 to 2018. The study employed the Fixed Effects Least Squares Dummy Variable Panel Regression Analysis. Based on the analysis, it was observed that gross national income and inflation rate exerted a positive and significant effect on household consumption expenditure, while interest rate and savings exerted a negative and significant effect on household consumption expenditure. The positive and significant effect of income on consumption expenditure supports the Keynesian position while the negative effect of interest rate on consumption upheld the intertemporal substitution effect. The paper recommended that concerted efforts should be geared towards improving the income base of households. Also, efforts towards balancing savings with investment should be developed and promoted.

Keywords: Consumption, Income, Panel Regression, Intertemporal Substitution Effect, West Africa, Marginal Propensity to Consume, Interest Rate

1. Introduction

Consumption is one of the core components of the national income of an economy. Thus, change in consumption is likely to exert an influence in the overall performance in the economy. A period of mass consumption is likened to an economic boom in the business cycle while less consumption can be analogous to recession. Consequently, stimulation of aggregate demand has been one of the core objectives of policy makers. This has been handled through diverse economic policies in both fiscal and monetary spheres. In the fiscal sphere, the government plays a vital role in promoting consumption so as to boost aggregate demand. This is achieved through expansionary fiscal policy which integrates intensification in government expenditure and shrinkage in taxation. The decrease in taxation translates to an increase in the disposable income at the household level which will eventually lead to an increase in consumption. At the monetary scene, the monetary authority can embark on an expansionary monetary policy to boost consumption. One of such ways is the reduction in interest rate. The role of interest rate in influencing consumption have been captured in the studies such as [1] and [2].

A decrease in interest rate encourage people to borrow more money, and the result is that consumers have more to spend, causing the economy to grow and inflation to accelerate [3]. However, an increase in interest rate will prompt households to save so as to take advantage of the rising interest rate. With this, marginal propensity to save increases leaving little for consumption. Meanwhile, there have been varying views on the role of interest rate on consumption expenditure. [4], in his General Theory, opined that interest rates have little influence on consumption decisions. Also, [5] established that higher interest rates dampen consumption ominously as a result of its effect on raising savings. On the magnitude of the effect of interest rate on consumption, there have been an observed substantial interest rates effects on consumer spending [6], as well as an observed small effects of interest rates on national consumption [7][8].

There have been contentions on the determinants of consumption. This has led to diverse consumption theories and hypotheses in the literature. Keynes in his Absolute Income Hypothesis (AIH) defined consumption as being a positive function of income. This implies that an increase in income is bound to produce an increase in consumption expenditure. However, such income increase is not likely to produce a 100% increase in consumption hence, Keynes introduced the concept of the marginal propensity to consume (MPC) which measures the rate at which consumption will change given a change in income. This Keynesian preposition that current disposable income is the main determinant of household consumption expenditure has been criticised due to its theoretical and long-run empirical inadequacies.

[9] disagreed with Keynes by stating that the utility of consumers depended not so much on their absolute income but rather on their relative income, both current income relative to previous income and current income relative to the income of others in society with whom the consumer feels in competition with. Hence, he advocated for the Relative Income Hypothesis. Similarly, Friedman in his Permanent Income Hypothesis (PIH) argued that it is not only the income that the household receives that affects consumption rather, expected income also plays a crucial role. To him, a consumer's spending behaviour during a particular period depends not only on that period's income but also on the future stream of income the

consumer expects to receive [10]. On the contrary, [11] in their Life Cycle Hypothesis are of the view that an individual consumption in any period depends on the total resources he has to spend over his life. Hence, individuals tend to spread out their consumption in a way that is smoother than his income stream.

The role of inflation in household consumption cannot be overemphasized. Inflation can influence household consumption expenditure through its influence on real income [12]. As noted by [13][14][15][16][17][18], both inflation and inflation expectations may predetermine consumption decisions and affect significantly private consumption in absolute terms and its commodity structure. It is evidenced that households expecting higher inflation are more likely to buy durables compared to households that expect constant or decreasing inflation [13].

Based on the discussion so far, it is observed that income, interest rate, inflation rate, and savings are critical determinants of consumption. However, pertinent questions become crucial. These are:

- i. Does income have any influence on household consumption in West Africa?
- ii. Is there any significant effect of interest rate on household consumption in West Africa?
- iii. Does inflation affect household consumption in West Africa?
- iv. Does savings exert any influence on household consumption decision in West Africa?

From these key research questions, this paper seeks to investigate the economic determinants of consumption expenditure in the West African sub-region with special emphasis on Nigeria and Ghana. Specifically, the paper seeks to:

- i. Investigate the effect of income on household consumption expenditure in West Africa,
- ii. Examine the intertemporal substitution effect of interest rate on household consumption expenditure in West Africa, and
- iii. Examine the effect of price expectations (inflation) on household consumption expenditure in West Africa, and
- iv. To investigate the influence of savings on household consumption expenditure in West Africa.

The following null hypotheses will be tested in the course of this study.

- i. There is no significant effect of income on household consumption expenditure.
- ii. Interest rate does not significantly influence household consumption expenditure.
- iii. Inflation does not exert significant influence on household consumption pattern.
- iv. There is no significant influence of savings on household consumption expenditure.

In achieving this, the paper is alienated into five major sections. Following this introduction is literature review in section two. Also, section three captures the methodology of the research while section four presents the empirical findings. Conclusion and recommendations of the research are adumbrated in section five which is the last section of the paper.

2. Literature Review

This section captures both theoretical and empirical literature on the determinants of consumption expenditure.

2.1. Theoretical Literature

Several theories of consumption have been discussed in the literature. Such include the Relative Income Hypothesis, Absolute Income Hypothesis, Life Cycle Hypothesis, Permanent Income Hypothesis, and Intertemporal Choice Consumption Theory. [4] postulated his absolute income hypothesis and opined that the main determinant of consumption expenditure is income. Categorically, current consumption is a function of current disposable income and is expressed as follows.

$$C_t = a + bY_d \quad (2.1)$$

$$\text{But } Y_d = Y - T \quad (2.2)$$

Hence Equation (1) gives rise to

$$C_t = a + b(Y - T) \quad (2.3)$$

Where C_t is current consumption at time t , 'a' is autonomous consumption, $(Y - T)$ is the current disposable income, and 'b' is the marginal propensity to consume (MPC) and it take the range $0 < b < 1$. According to Keynes, the marginal propensity to consume increases as income increases though at a decreasing rate. Also, the marginal propensity to consume (MPC) is less than the average propensity to consume (APC) and that APC falls as income increases [19].

The Relative Income Hypothesis is associated with [9]. According to him, consumption hinges on relative income [20] hence, consumption spending is highly influenced by income earned by neighbouring households. He further argued that if consumers are concerned with social status and if consumption expenditure as demonstrated by income is an accepted guide to social position, then the proportion of income a family spends will depend heavily on its relative income position [10]. In summary, [9] contended that the utility of consumers depended not so much on their absolute income (Keynes' view), but rather on their relative income, both current income relative to previous income and current income relative to the income of others in society with whom the consumer feels in competition with. Consequently, economy-wide increases in absolute incomes which do not affect the relative income distribution will have little impact on the behaviour of consumers in terms of the share of income consumed.

Milton Friedman in his permanent income hypothesis of 1957 argues that a consumer's spending behaviour during a particular period depends not only on that period's income but also on the future stream of income the consumer expects to receive [10]. The theory is aimed at explaining why consumption is smoother than income [21]. Hence, the systematic relationship which we should look for between consumption and income is the relationship between permanent consumption (C_p) and permanent income (Y_p). Friedman divided consumption and income into two parts: permanent and transitory. This is represented as:

$$Y = Y_p + Y_t \quad (2.4)$$

$$C = C_p + C_t \quad (2.5)$$

Where Y is the observed income, Y_p is permanent income, Y_t is transitory income, C is observed income, C_p is permanent consumption, and C_t is transitory consumption. Y_p captures the expected expendable income available to be spread over the consumer's life while C_p is that consumption which the consumer systematically chooses to enjoy based on its permanent income. Friedman argues that the behaviour of consumers is much more closely determined by permanent income than transitory income. Y_t and C_t are unexpected change movement in Y and C . Also, C_p and Y_t are not correlated with one another, and not correlated with their permanent components. In summary, Friedman argues that a change in observed income would systematically affect consumption (if at all) to the extent that it affects the value of the permanent income. A change in the level of current income could have little impact on the permanent income level of a consumer with low time horizon and thus will have little effect on his consumption behaviour [10].

The permanent income hypothesis (PIH) provides intuitive explanations for many of the more important aspects of consumer behaviour with, at its heart, the fact that over long periods of time variations in permanent income reflect variations in aggregate income growth in an economy i.e. permanent increases in the economy's resources. On the policy front it can guide policymakers as to the most effective policy course by, for example, explaining the relatively small economic impact which temporary tax cuts would engender compared with a permanent reduction.

The life cycle hypothesis of Modigliani, Brumberg and Ando in 1957 is of the opinion that man is futuristic. They divide the consumption pattern of men into three: borrowing to consume, consuming and saving to payback the debt in period, and dissaving. Income is low during the early years of life, rises towards a peak in the late years of full time employment and falls to a low level in late years of life. The hypothesis suggests that an individual will spread out his consumption in a way that is smoother than his income stream. This pattern is depicted below.

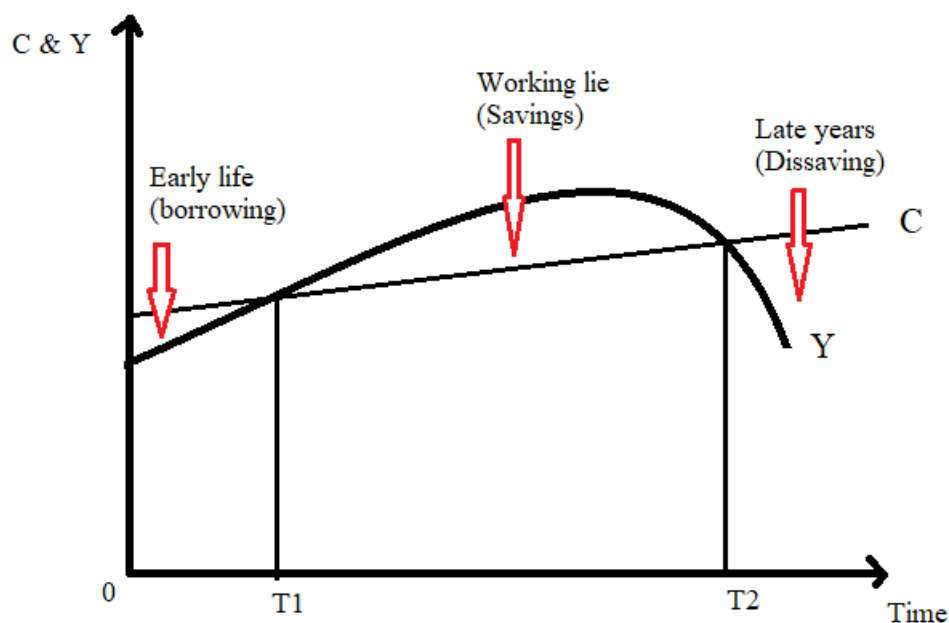


Figure 1: Life Cycle Consumption Pattern

Thus, an individual consumption in any period depends on the total resources he has to spend over his life. This hypothesis gives room to no bequest motive as everything is consumed. It therefore follows that the greater the individual's wealth or the shorter his expected life, the larger his yearly consumption will be.

In the most normal formulation of the life-cycle hypothesis, the lifetime planning horizon of the individual consumer, combined with the expected proportionality between consumption and permanent income, ensures that no net lifetime savings are planned with transfers to heirs only being equivalent to their own initial inheritance. Changes in current income influence changes in current consumption only to the extent that such changes can be regarded as being permanent and consequently justify a recalculation of lifetime consumable resources. In the event of temporary income gains, the consumption impact is likely to be small.

The key similarities among these sets of hypotheses is that the average propensity to consume (APC) tends to decline as income rises.

3.2. Empirical Literature

[22] carried out an empirical analysis of change in income on private consumption expenditure in Nigeria using time series data for the period 1981 to 2010. They found a significant relationship between gross domestic product (a proxy of income) and private consumption expenditure.

Similarly, [23] examined the impact of consumer confidence and expectation on consumption in Nigeria using panel data analysis. The result showed that consumer confidence, current income, income expectation, expected change in the prices of food and durables, and exchange rate are the determinants of consumption expenditure in Nigeria.

[24] found a positive relationship between consumption expenditure and income in conformation to Keynesian consumption model. From the findings, interest rate, price level and exchange rate were significant variables influencing consumption behaviour in Nigeria.

this finding tallies with the conclusion of [25] who explained that macroeconomic shock influenced the level of household welfare via low private consumption expenditure and inflation may also affect measure of welfare if the income of low income families responds slowly to increases in the price level.

[3] investigated the determinants of aggregate consumption expenditure in Nigeria for the period 1981 – 2015. The study employed the ARDL approach and the result showed that gross domestic product (a proxy for income) has a positive and significant effect on aggregate consumption expenditure in both short run and long run. Also, interest rate was observed to impact a significant influence on aggregate consumption expenditure. It was recommended that policies that improves gross domestic product should be pursued such as encouraging small businesses and foreign investors by creating a friendly investment environment in the Nigerian economy in order to accelerate productivity which in turn spurs consumption of goods and services.

In the same vein, [12] examined the determinants of household private consumption expenditures in Asian countries - 3 countries of East Asia - China, Republic of Korea and Japan, 9 ASEAN members – Brunei Darussalam, Malaysia, Indonesia, Singapore, Philippines, Thailand, Vietnam, Cambodia and Laos – using panel data analysis. The panel data span through the period 1991 – 2015. Findings of the study revealed that income, population growth, and government expenditure exerted a positive effect on consumption while interest rate exerted a negative and significant effect. It was concluded that income-stimulating policy may bring substantial results to boosting of household final consumption expenditure.

[26] attempted an analysis of the determinants of consumption in Nigeria using ARDL approach. The results and findings revealed that individuals do not behave according to the baseline models of consumption. Also, consumption patterns favoured non-durable consumption and necessities. The paper called for economic policy and programme that will switch consumption away from non-durables to durables since it would enhance wealth creation, savings, investment and economic growth and development.

3. Methodology

3.1. Basic Study Design

This study is an econometric approach to examining the economic determinants of household consumption expenditures with emphasis on Nigeria and Ghana. The study places emphasis on the Keynesian consumption function as well as modifications of the function to incorporate other variables. The data were sourced from secondary sources and were analysed using statistical software.

3.2. Model Specification

In this study, three sets of models are specified. First, we specify a pure Keynesian consumption function as follows:

$$C = f(Y) \tag{1}$$

Which translates to

$$C = \alpha + \beta Y + \mu_t \tag{2}$$

Where:

C = household consumption expenditure

Y = gross national income (a proxy for income)

α = autonomous consumption

β = slope coefficient (the marginal propensity to consume)

Secondly, we recognize the role of interest rate in determining the rate of household consumption. The interest rate is included as a variable when testing for the presence of intertemporal substitution effects (Bayer & Morrow, 1999). Thus, our model (1) is modified to incorporate interest rate as follows.

$$C = f(Y, r) \tag{3}$$

Equation (3) states that consumption is a function of income and interest rate. Theory has clearly stated that there is an inverse relationship between consumption expenditure and interest rate. Equation (3) is transformed to its estimable form to become:

$$C = \alpha + \beta Y + \delta r + \mu_t \tag{4}$$

Where r is the interest rate and δ is the coefficient that captures the effect of interest rate on household consumption expenditure – the intertemporal substitution effect.

Finally, the literature is fraught with other economic determinants of household consumption expenditures. One of such is savings. Savings is highly recognized in the life cycle hypothesis hence, savings occurs out of the desire to smooth one’s lifetime consumption path by evening out normal cyclical income fluctuations during different periods of one’s life, with the need to provide sufficient resources for retirement being the clearest example of these life-cycle effects [27]. Another key variables as introduced by [3] is the inflation rate. As stated by [3] “If consumers expect that prices will rise in the near future, they hasten to spend large sum out of a given income to take advantage of current low prices. Hence, when prices are expected to be high in the future, the propensity to consume increases or the consumption function shifts upward.” Based on the foregoing, our third model is specified as follows.

$$C = f(Y, r, S, I) \tag{5}$$

Equation (5) becomes

$$C = \alpha + \beta Y + \delta r + \vartheta S + \gamma I + \mu_t \tag{6}$$

Where S is savings and I is the inflation rate.

Transforming equation (6) into a double-log function yields:

$$\log C = \alpha + \beta \log Y + \delta r + \vartheta \log S + \gamma I + \mu_t \tag{7}$$

notice that r and I are not in log form since they are already in rates. Equation (7) is therefore the model that will be estimated in this study.

3.3. A Priori Expectation

The a priori expectation for the various coefficients is expected to be as follows: $\alpha > 0$; $\beta > 0$; $\delta < 0$; $\vartheta < 0$; and $\gamma > 0$.

3.4. Sources of Data

Data for this study were obtained from World Development Indicators (2018) – a publication of World Bank.

3.5. Analytical Technique

This study employs the panel data regression approach. Specifically, the study utilizes the Fixed Effects Least Squares Dummy Variable (FELSDV) panel regression approach. This approach seems appropriate for this study than the random effect. The fixed effects model does a good job of estimating panel data equations, and it also helps avoid omitted variable bias due to unobservable heterogeneity [28].

4. Empirical Analysis

4.1. Descriptive Statistics

The descriptive statistics of the variables are presented in Table 1.

Table 1: Descriptive Properties of the series.

	<i>logC</i>	<i>logY</i>	<i>logS</i>	<i>r</i>	<i>I</i>
<i>Mean</i>	27.356	27.624	25.983	12.666	13.581
<i>Maximum</i>	32.207	32.444	30.770	30.854	32.905
<i>Minimum</i>	21.291	21.424	19.076	5.6925	5.3822
<i>Standard deviation</i>	3.7609	3.8093	4.1578	5.1641	5.5785
<i>Skewness</i>	-0.11477	-0.15838	-0.18831	1.9435	1.3952
<i>Kurtosis</i>	-1.5426	-1.5546	-1.6716	4.2301	2.5461
<i>Asymptotic test:</i>	4.0540	4.1952	4.8935	55.003	23.781
<i>Chi²(2)</i>	[0.1317]	[0.1227]	[0.0866]	[0.0000]**	[0.0000]**
<i>Normality test:</i>	11.103	12.161	17.820	30.500	12.511
<i>Chi²(2)</i>	[0.0039]**	[0.0023]**	[0.0001]**	[0.0000]**	[0.0019]**
<i>Observations</i>	40	40	40	40	40

Source: Author Computation using Givewin2.

From Table 1, the log of household consumption expenditure averaged 27.356 with a standard deviation of 3.7609 while the log of income averaged 27.624 with a standard deviation of 3.8093. Other variables are as specified in Table 1. Further, all the variables pass the normality test as depicted by the significance of the normality test Chi²(2) at the 5% level of significance.

4.2. Correlation Analysis

Determining the degree of associations between the variables, the Pearson correlation analysis is presented in Table 2.

Table 2: Correlation Matrix

	<i>logC</i>	<i>logY</i>	<i>logS</i>	<i>r</i>	<i>I</i>
<i>logC</i>	1.00	0.999	0.986	-0.567	-0.410
<i>logY</i>		1.00	0.991	-0.563	-0.415
<i>logS</i>			1.00	-0.517	-0.378
<i>r</i>				1.00	0.656
<i>I</i>					1.00

Source: Author Computation using Givewin2.

From Table 2, there is an evidence of high correlations between *logC* and *logY*; *logY* and *logS*; as well as between *logC* and *logS*. Also, these correlations are positive indicating that as one increases, the other also increases and vice versa. The high correlations between consumption and income and consumption and savings cannot in any way be linked to causation. However, these high degree of associations will be tested further using regression analysis.

4.3. Empirical Findings

The result of the fixed effect LSDV panel regression result is presented in Table 3.

Table 3: Fixed Effect LSDV Regression Result

Variables	Coefficient	Standard error	t-statistic	Probability
Constant	0.205	0.969	0.212	0.833
<i>logY</i>	1.1927	0.077	15.5	0.000
<i>logS</i>	-0.2205	0.0491	-4.49	0.000
<i>r</i>	-0.0092	0.003	-3.46	0.001
<i>I</i>	0.0135	0.0004	35.9	0.000

Sigma = 0.1180; sigma² = 0.0139; R² = 0.9991; RSS = 0.47; TSS = 551.6310

Wald (joint): Chi²(4) = 150.7 [0.000] ** Wald (dummy): Chi²(2) = 0.06180 [0.970]

Source: Output from Givewin2

The result presented in Table 3 reveals that all the variables in the model exert significant effect on household consumption expenditure. Also, the signs meet the a priori expectations as specified in section 3.3. The log of income (*logY*) and inflation rate (*I*) exert positive and significant effect on household consumption expenditure at the 1% level of significance. This reveals that a unit percentage increase in income and inflation will lead to a 1.1927% and 0.0135% increase in consumption expenditures respectively. This positive and significant effect of income and inflation on household consumption expenditure necessitates the rejection of the null hypothesis that: (i) income does not exert a significant effect on household consumption expenditure, and (ii) inflation does not exert significant influence on household consumption pattern at the 1% level of significance.

Also, the log of savings (logS) and interest rate (r) exert negative and significant effect on household consumption expenditure at the 1% level of significance. This implies that a unit percentage increase in savings and interest rate will lead to 0.2205% and 0.0092% decrease in household consumption expenditures respectively. Hence, the null hypothesis that: (i) savings does not significantly influence consumption and (ii) Interest rate does not significantly influence household consumption expenditure are all rejected at the 1% level of significance.

The R^2 (0.9991) reveals that 99.91% of the total variations in household consumption expenditures within the West African region is explained by changes in income, savings, interest rate and inflation rate. The insignificance of the Wald (dummy) $\chi^2(2)$ statistic of 0.06180 and the concomitant significance of the Wald (joint) $\chi^2(4)$ statistic of 150.7 is an indication that the individual country's effect of the explanatory variables on household consumption expenditures is the same across the West African sub-region and that the explanatory variables significantly affect household consumption expenditures in West Africa generally.

4.4. Major Findings and Discussions

Based on the empirical result, the major findings of the study are:

1. There is a positive and significant effect of income on household consumption expenditures in West Africa. As expected, income is one of the core determinants of consumption especially under the Keynesian framework. A rise in income is expected to culminate to a rise in aggregate consumption. In line with this finding, [24] found a positive relationship between consumption expenditure and income.
2. There is a positive and significant effect of inflation rate on household consumption expenditure in West Africa. Here, the role of expectations is put to play. When households expect that prices will increase in the future, they are likely to consume more at present to offset the price increase in the future. Households expecting higher inflation are more likely to buy durables compared to households that expect constant or decreasing inflation [13].
3. There is a negative effect of interest rate on household consumption expenditures in West Africa. This portrays the prevalence of the intertemporal substitution effects. If the rate of interest is high, households will be willing to keep their money in the financial market to take advantage of the rising interest rate hence, a decline in present consumption. However, when the rate of interest is low, there will be no incentive to keep income in the financial market hence, there is a likelihood that consumption will increase in this scenario. The negative and significant effect of interest rate is in line with the conclusion of [29][30] that interest rates is a core determinant of savings and consumption expenditure [3]. Also, higher interest rates discourage consumption significantly, raising savings and vice versa [5].
4. There is a negative and significant effect of savings on household consumption expenditures in West Africa. This is an indication of the prevalence of the life cycle hypothesis in the consumption pattern in West Africa. When more is saved, less will be available for present consumption, hence, the negative effect.

5. Conclusion and Recommendations

Consumption is not only a positive function of income as postulated in the Keynesian economics. Other key variables such as interest rate, inflation rate, past period income, wealth, savings, availability of credit facilities, as well as subjective factors like enjoyment, short-sightedness, generosity, miscalculation, extravagance and ostentation. This paper examined the effect of economic factors that affects household consumption expenditure in West African sub-region. The paper utilized the Fixed Effect LSDV panel regression analysis. It was discovered that income and inflation rate has a positive and significant effect on household consumption expenditure while interest rate and savings had a negative and significant effect. The paper concludes by stating that the Absolute Income Hypothesis (AIH) of Keynes holds true for West Africa even when other macro-economic variables such as inflation rate, interest rate, and savings were duly considered in the study.

Based on the findings of the study, it is recommended that concerted efforts should be geared towards improving the income base of households. This can be achieved, among other options, though encouraging small businesses and discouraging income generating impediments such as excessive taxation. Also, monetary authorities should target investment-friendly interest rate as such would enhance corporate and individual borrowings which in turn encourages investments and consumption expenditures in the West African sub-region. There is need to channel savings into productive investment within the sub-region as savings is a leakage while investment is an injection. Through this, more employment will be generated and more income will accrue to the households which will in turn promotes aggregate consumption.

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