**IMPACT OF INFLATION AND PER CAPITA INCOME ON CONSUMPTION EXPENDITURE IN ECOWAS**

**OGUNBADEJO HUSSAIN KEHINDE**

*Economics and Statistics Section, Nigerian Institute for Oceanography & Marine Research, Victoria Island Lagos*

*ogunbadejohk@yahoo.com**, +2348023911896*

**WAKILA OLABISI BALOGUN\***

*Department of Economics, Lagos state University of Science and Technology*

*balogun.wo@lasustech.edu.ng, +2349032129244(Corres. Author)*

**AGBABIAKA KAMOR OLADIMEJI**

*Department of Economics, Lagos state University of Science and Technology*

*kamoroladimeji@gmail.com**, +2348027125124*

**ABSTRACT**

The study used advanced auto regressive distributed lag to examine the relationship between consumer expenditure, inflation rate, and per capita income in nine ECOWAS countries from 1991 to 2023. It finds a cointegration link between GDP per capita, inflation rate, and consumption spending. In the long run, consumption is positively impacted by inflation and income in eight ECOWAS countries while in the short run, high inflation leads to a decrease in consumption expenditure. The study recommends that the government should keep inflation under control and encourage economic expansion, central banks and fiscal authorities must work together and policymakers should create stimulus plans or tax breaks that will boost spending and spur economic expansion.

**Keywords**: Consumption Expenditure, Inflation, Economic Growth,

**JEL Codes**: E21, E31, O47, 055.

**1. INTRODUCTION**

The nation's economic stability is a significant concern for all governments worldwide. Deflation, inflation, national consumption rate, government policy, and other factors all have a significant effect on a nation's economy. When the average level of prices for goods and services continues to rise, it is referred to as inflation. This indicates that the price index that is inclusive of all prices is still increasing. In an economy that is expanding and evolving, certain prices must rise while others must fall as supply adjusts to meet shifting consumer preferences and national requirements. Price and tariff increases that are widespread and persistent are portrayed as inflation. The increase will be divided into economic goods categories. Inflation thereby modifies pricing relationships.

Raising the price of consumer goods in line with salaries is the most significant shift that should cause inflation. This will record profits and encourage the restart of production where there are actual resources, re-establishing a functional link between prices and costs. Numerous theoretical and empirical studies, including those by Barro (1995), Bruno and Easterly (1998), and Rousseau and Wachtel (2002), demonstrate that persistent and therefore probably predictable high rates of inflation can have detrimental effects on an economy's long-term real growth rate or real activity level.

According to Osuji and Agbada (2020), household consumption expenditure rises as a result of inflation. He went on to provide an example: individuals spend more money on products and services during periods of inflation than they do during periods of lower inflation. In other words, inflation raises the average amount spent on private consumption. Adeneye (2022) defines inflation as a frustrated price increase. A general economic movement raises the prices of goods and services overall, which implies that the cost of these items exceeds their true value.

According to World Bank (2022) national accounts data, there is a discernible downward trend in per capita home consumption in ECOWAS nations. Research indicates that from 2010 and 2021, per capita consumption fell by almost 10%. The high percentage of the population making less than $1.90 USD per day is one reason contributing to this trend, which affects food security and general living conditions. Furthermore, there is a complicated relationship between ECOWAS economic growth and government spending; some research indicates that government consumption expenditures have a detrimental effect on private consumption.

During periods of inflation, consumers tend to prioritize saving money over spending due to economic instability and a general sense of pessimism. This affects both liquid and illiquid assets, ultimately impacting consumer spending. Inflation also affects the distribution of household incomes among employers, employees, borrowers, and creditors, eroded by nominal assets (Bruno and Easterly (1998), and Rousseau and Wachtel (2002).

However, the precise relationship between final consumption expenditure and inflationary pressure in ECOWAS has been a contentious topic in the economic literature; few economists agree that the strength of the inflationary rate stimulates or declines the private final consumption expenditure. Therefore, empirical research was necessary to determine the extent to which inflationary pressure impacted the private final consumption expenditure in Nigeria over the period spanning 1999 to 2023.

We specifically employ the Pool Mean Group (PMG) estimator, which assumes heterogeneous short-run effects and homogeneous long-run effects within a panel error correction model (Pesaran et al., 1999). Blackburne and Frank (2007) integrated this method into Stata using the community-contributed command xtpmg. Through an analysis of the entire panel and country-level analysis, this study provides various pieces of evidence based on data from nine ECOWAS nations.

To the best of our knowledge, this study appears to be the first to examine the impact of inflation, income per capita on total consumption in ECOWAS countries over both the long and short terms. Additionally, it utilizes a more efficient and less restrictive econometric methodology, which improves the findings for ECOWAS nations and contributes to the existing empirical literature on the relationship between inflation and consumption spending.

This study objective is to examine the effects of inflation on total consumption expenditure and economic growth in ECOWAS. It will analyze the relationship between inflation and overall consumption expenditure and the relationship between income and consumption expenditure. The findings will provide valuable insights into macroeconomic strategies aimed at achieving price stability, financial management, politicians, investors, and government representatives, and lay a strong foundation for future investigations into inflation, total consumption expenditure, and economic growth.

**2. LITERATURE**

**2.1Theoretical Review**

**2.1.1The Keynesian Theory of Inflation**

*"*The Keynesian inflation theory can be seen as an extension and elaboration of Wicksell's (1898) perspective."In Interest and Prices, Wicksell’s (1898) made the case that comparing the money rate of interest to the natural rate of interest might be used to determine the equilibrium of a credit economy. Keynes (1930) posited that an increase in real factors could lead to a rise in aggregate demand. He defined the inflationary gap as the difference between the output that can be achieved at full employment and the expected level of expenditure. According to Keynes, inflation, or an overall increase in price levels, occurs when aggregate demand grows faster than aggregate supply. An increase in government spending (G), private consumption (C), and private investment (I) will elevate aggregate demand.” If the economy is already at full employment, this increase in demand will result in higher general price levels”. Keynes believed that the rate of interest acted as an indirect link between prices and nominal money income. According to Mankiw (2010) and Anochiwa and Maduka (2015), an increase in the amount of money results in a decrease in the interest rate, which raises investment levels, which raise aggregate demand levels and, ultimately, output levels. Similarly, structuralists believe that changes in the composition of demand, particularly wage-price and aggregate demand are what cause inflation rather than increases in prices.

**2.1.2 Life Cycle Theory of Consumption**

An important idea within post-Keynesian economics is Modigliani's theory. This theory suggests that consumption in a given period is influenced more by a person's expected lifetime income rather than their current income. According to the life cycle hypothesis, individuals plan their consumption based on their expectations of income throughout their lives. As a result, a person's level of consumption tends to remain relatively stable or may even increase slightly over time. According to Modigliani (1986), the life cycle model's starting point is the theory that, within the constraints imposed by the resources that a household accumulates over the course of its lifetime, decisions about saving and consumption at each stage of life represent a more or less deliberate attempt to achieve the desired distribution of consumption over the life cycle.

**2.2 Empirical Literature Review**

Inflation refers to the rise in prices for consumer goods and services over a specific period. It is often caused by an excessive money supply, which can lead to high inflation rates. When inflation rises too quickly, it can escalate into hyperinflation. Depending on the situation, hyperinflation can depreciate the currency and cause a recession or even an economic collapse.

Barro (1995) examined the impact of inflation on the economic performance of over 100 nations, using data from the 1960s and 1970s. The study's regression analysis found that for every annual increase of 10% in average inflation, real GDP growth decreases by 0.2 to 0.3 percent, and the investment-to-GDP ratio declines by 0.4 to 0.6 percent, assuming that various national characteristics remain constant.

Alem and Soderbo (2010) conducted a study using panel data to analyze household consumption in urban Ethiopia, focusing on the effects of idiosyncratic shocks and inflation in food prices. Their findings revealed that rising food prices negatively impacted households with low asset levels. Furthermore, they found that households relying on casual employment were more susceptible to shocks in food prices.

In 2011, Wadal conducted an econometric analysis of the private consumption function in Lebanon. The study examined how consumption in the country responded to factors such as wealth, inflation, interest rates, and income. The primary drivers of real private consumption in Lebanon were investigated using a data set spanning the years 1975–2007 using actual factors rather than nominal variables. The findings revealed that long-term private consumption in Lebanon was significantly influenced by wealth, projected inflation, and current disposable income.

Agalega and Acheampong (2013) conducted a study using a co-integration approach with annual time series data from 1980 to 2010 to examine the effects of inflation, policy rates, and government consumption expenditure on GDP growth in Ghana. Their findings revealed a long-term positive correlation between real GDP, policy rates, and inflation. In contrast, government consumption spending demonstrated a long-term negative effect on real GDP. Additionally, the results indicated that both government consumer spending and inflation had a beneficial short-term impact on real GDP.

In their 2022 study, Olusola, Chimezie, Shuuya, and Addeh assessed the impact of inflation on Ghana's economic development and private consumption spending from 1990 to 2020. They utilized Engle-Granger analysis and ordinary least squares to estimate the relationship between the inflation rate and private consumption spending, including cointegration, error correction, and Granger causality methods. The study concluded that there is a cointegration relationship among interest rates, inflation, private consumption spending, and gross domestic product (GDP). It found that interest rates and GDP have significant positive effects on private consumption expenditures in the long term, while inflation has a considerable negative impact.

Ewane and Andigema (2022) use World Bank data from 1980 to 2020 to investigate how Cameroonian households' final consumption spending is affected by fluctuations in the inflation rate. They employed the error correction model (ECM) and the autoregressive distributed lag (ARDL) bound test, with these methods informed by the results of a unit root test. Their findings indicate that household final consumption spending is both positively and significantly influenced by the inflation rate, both in the short term and over the long term.

Osuji (2020) employed the ordinary least squares econometric method to examine the impact of inflation on household final consumption spending in Nigeria from 1981 to 2018. The study's findings indicate that household consumption spending and inflation have a positive and significant long-term relationship in Nigeria.

In their 2018 study, Manasseh, Abada, Ogbuabor, Onwumere, Urama, and Okoro investigate how interest rates and inflation affect consumer spending. In order to determine whether consumer spending can be used to forecast future interest and inflation rates in the economy, the study expanded its investigation into the causal relationship between consumer spending, interest, and inflation rates using data spanning the years 1981–2011 and the Granger causality Wald test. The results indicate that interest and inflation rates, along with other control variables like per capita income, indirect tax, and savings, are significant determinants of private consumption expenditure in Nigeria. They also suggest that all interest and inflation rates account for roughly 93.38 percent of the variation in consumer spending.

**3. METHODOLOGY**

**3.1. Data and Preliminary Tests**

This study used a secondary data source, and the information was extracted from the World Bankdevelopment Indicator (WDI) and the Central Bank of Nigeria's (CBN) 2023 issue. Microsoft Excel for Windows was used for data entry, and STATA 15, an econometrics statistical tool, was used for estimation. The impact of income and inflation on consumption expenditure was empirically studied using annual secondary data for 9 members of ECOWAS countries from 1991 to 2023.

The countries under study include: Benin, Burkina Faso, Cote d’Ivoire, Ghana, Niger, Nigeria, Senegal, Sierra Leone and Cape Verde. The coverage of countries and time period are dictated by the data availability for at least T = 33 observations. It is a balanced macro panel data analysis.

The variables under investigation are final consumption expenditure per capita (C), gross domestic product per capita (Y) as a proxy for income and Inflation (Pr).

**3.2 Model Specification**

Following Bailey (1971) we define effective consumption as

$logCit= α +γlogYit+β logprit+μit$ (1)

The study's model can be expressed as follows: An advanced autoregressive distributive lag (ARDL) dynamic panel specification of the type (p; q1, ----- qk).

$y\_{i,t}=\sum\_{j=1}^{p}⋋\_{ij}y\_{i,t-j}+\sum\_{j=0}^{q}δ\_{ij}^{'}X\_{i,t-j}$+ $u\_{i}$+ $ϵ\_{it}$ (2)

where the number of groups i = 1; 2;….,N; the number of periods t = 1; 2; …., T; Xit

is a k × 1 vector of explanatory variables; $δ$it are the k × 1 coefficient vectors; $⋋$ij are

scalars; and $ u$i is the group-specific effect. T must be large enough such that the model

can be fitted for each group separately.

$Δy\_{it}=ϕ\_{i}(y\_{i,t-1}-θ\_{i}^{'}X\_{it})+\sum\_{J=1}^{p-1}⋋\_{ij}^{\*}∆y\_{i,t-1}+\sum\_{J=0}^{q-1}δ^{'}\_{ij}^{\*}∆X\_{i,t-j}$+ $u\_{i}$ + $ϵ\_{it}$ (3)

where: $ϕ\_{i}=-($1$-\sum\_{j=1}^{p}⋋\_{ij}),θ\_{i}=\sum\_{j=0}^{q}δ\_{ij}/(1-Σ\_{k}⋋\_{ik}),⋋\_{ij}^{\*}=-\sum\_{m=j+1}^{p}⋋\_{im}$

The parameter is expected to

$Cit = ∅0t + ∅1tYit +∅2tPRit+ u\_{i} + ϵ\_{it}$ (4)

Where: Yit represents income, Cit represents household consumption, PRit represent inflation (price) and μit represents the stochastic disturbance term, which is thought to have a normal distribution. It is anticipated that the income coefficient will be positive and less than one, and price to be negative less than one.

**4. RESULTS AND DISCUSSION OF FINDINGS**

 Descriptive Analysis

Table 1: displays the summary statistics of the data in the computed model.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ct |  | Yt |  | Pr |  |  |
| Country | T | mean | std | mean | std | mean | std | Þ |
| Nigeria | 33 | 1626.839 | 416.1628 | 1615.586 | 762.2737 | 18.60876 | 16.0294 | 0.71 |
| Ghana | 33 | 1001.916 | 671.3323 | 1133.876 | 802.42 | 19.78152 | 13.02697 | 0.99 |
| Sierra leone | 33 | 491.6449 | 122.6813 | 558.2009 | 313.6373 | 18.87293 | 20.49582 | 0.94 |
| Benin | 33 | 713.4825 | 51.81596 | 812.5772 | 354.0906 | 4.001531 | 6.861486 | 0.92 |
| Niger | 33 | 329.6087 | 29.30077 | 404.6523 | 147.5198 | 3.611473 | 6.488526 | 0.64 |
| Coted  | 33 | 654.3991 | 524.0068 | 1463.38 | 539.3197 | 3.653728 | 4.788546 | 0.86 |
| Senegal | 33 | 829.3783 | 93.74153 | 1094.791 | 343.0213 | 3.178187 | 5.75242 | 0.89 |
| Cape verde | 33 | 1887.727 | 589.7341 | 2667.516 | 1357.021 | 3.248068 | 2.7633 | 0.88 |
| Burkna | 33 | 385.9916 | 72.54525 | 521.6729 | 232.131 | 3.525249 | 5.022724 | 0.9 |

The variables' descriptive statistics are shown in Table 1. It is evident that the ECOWAS nations differ greatly from one another. For example, the average total consumption per capita in Cape verde is $1887.727, follow by Nigeria with $1626.839 while in the Niger it is $329.6087 per capita. Likewise, the average per capita income Cape verde ranges from $2667.516,$1615.585 for Nigeria to $404.6523 in Niger. However, Senegal has the least inflation rate of 3.17% while Ghana has the highest inflation rate of 19.78% during the period of study. In 9 nations and for the entire panel, the correlation coefficient between consumption and income indicates that there is a positive and significant association between the two variables.

Table 2: Correlations

|  |  |  |  |
| --- | --- | --- | --- |
|  | c | pr | y |
| c | 1 |  |  |
| pr | -0.0826 | 1 |  |
| y | 0.6976 | -0.0637 | 1 |

Table 2 shows that consumption spending (C) has a weak negative connection (r = 0.0826) with the inflation rate (PR). This suggests that a percentage increase in the level of INF results in a 0.0826 percentage drop in consumption. Income (Y) shows a weak negative connection with inflation (PR) (r = -0.0637). As a result, a percentage increase in PR will reduce purchasing power, income (Y), by 0.0637 percent. Finally, the findings indicate that there is a direct and substantial positive association between income Y and consumption spending (r = 0.6776).

Table 3:Stationarity tests.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | LLC Test |  | IPSTest | Hadri Test |
| Variables | Level | 1st Diff | Level | 1st Diff | Level | 1st Diff |
| lc | 0.9374 | -7.0141 | 2.9638 | -9.6621 | 42.4066 | 0.9378 |
| lpr | -4.9963 | -10.496 | -6.6440 | -11.370 | 3.2241 | -2.1876 |
| Ly | -0.5740 | -8.1670 | 2.4524 | -9.2576 | 52.2661 | -0.7432 |

Note \*\* and\* are respectively, they are statistically significance at 1% and5%.

"The null hypotheses of Im, Pesaran, and Shin (IPS) and Levin, Lin, and Chu (LLC) tests were that the underlying series were non-stationary, while the Hardi null hypothesis was that the series was stationary."

“Table 3 displays the panel's stationarity test results. The results show that all panels, except for the inflation rate (PR) in the Levin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS) and Hardi tests, have unit roots at certain values”. Our analysis of the Im, Pesaran, and Shin panel unit root test results indicates that certain variables were stationary at the 1% level of significance. Thus, we can regard the variables as being integrated of order one and zero. Therefore, the mixed stationary tests met the criteria for the conduct advance autoregressive distributed lag cointegration test in order to examine the existence of long-run relationship among the variables understudy within the sampled period spanning between the periods of 1991 to 2023.

Table 4. Results for cross-sectional dependence tests.

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Breuseh-PaganLM | Peseran Scaled LM | Peseran CD |
| C | 664.4505 (0.000) | 74.06261 (0.000) | 24.94459 (0.000) |
| Y | 923.8876 (0.000) | 104.6386 (0.000) | 30.271778 (0.000) |
| PI | 187.0416 (0.000) | 17.80043 (0.000) | 11.30791 (0.000) |

Numerous tests for examining cross-sectional dependency in panel data are available in the econometric literature Sarafidis (2012). The findings of the cross-section dependence test, which are shown in Table 4, unequivocally show that cross-section dependence affects the variables. This implies that ECOWAS nations have cross-sectional connections and that a shock to one is likely to have an impact on the others. Consequently, it is best to use an estimating technique that takes into consideration both cross-sectional dependency and heterogeneous slopes.

Pesaran’s test of cross-sectional independence = 1.736 prob= 0.0825

Average absolute value of the off diagonal elements =0.518

Breusch-Pagon LM test of independence chi2(36)= 28.315 pr = 0.1132.

Pasran CD (cross-sectional dependence) test is used to test whether the residuals are correlated across entities. The null hypothesis is that the residual are not correlated. While the null hypothesis in the pagon/ LM test of independence is that residuals across entities are not correlated since their prob > 0.05.

Table 5: The Results of Pooled Mean Group Regression (Long-Run Estimates)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| D.c | Coef. | Std.Err | z | P>|z| | [95% Conf | Interval] |
| ec | |   |   |   |   |   |   |
| pr | 0.108918 | 0.067432 | 2.01 | 0.044 | -0.06325 | 0.002241 |
| y | 0.977392 | 0.079183 | 12.34 | 0 | 0.822197 | 1.132586 |
| SR | |   |   |   |   |   |   |
| ec | -0.03665 | 0.018215 | -2.01 | 0.044 | -0.07235 | -0.00095 |
|  pr | |   |   |   |   |   |   |
| D1. | 0.00937 | 0.011012 | 0.85 | 0.395 | -0.01221 | 0.030953 |
|  y | |   |   |   |   |   |   |
| D1. | 0.284497 | 0.122022 | 2.33 | 0.02 | 0.045338 | 0.523656 |
|  | |   |   |   |   |   |   |
| \_cons | -0.01038 | 0.016391 | -0.63 | 0.527 | -0.0425 | 0.02175 |

xtpmg using the PMG option fits the model because the estimated Hausman statistic test suggests it. The PMG model allows for heterogeneous short-run dynamics and common long-run income and inflation elasticities. Also, the estimated income elasticity is significantly positive.

The positive association between consumption and income in ECOWAS countries, as demonstrated by a pooled mean group regression study, is consistent with conventional economic theory. This link shows that as income rises, so does consumption. It was supported by the Keynesian consumption function theory, which states that consumption is determined by disposable income. As income rises, so does consumption, which is consistent with his findings. He also argued that a positive relationship between consumption and income can contribute to economic growth because increasing consumption stimulates economic activity.

The findings also support the findings of Ouedraogo (2013) in the Economic Community of West African States (ECOWAS), who discovered a substantial association between GDP and energy consumption, which might be connected to total consumption habits.

The results indicate a positive and significant relationship between consumption and income.The concept of marginal propensity to consume (MPC), which is the ratio of change in consumption to change in income, provides the economic explanation for the finding that a 1% increase in income results in a 0.97% increase in consumption. In this instance, the MPC is 0.97, meaning that for every additional unit of income, consumption increases by 0.97 units. MPC is positive but less than unity: Despite the fact that the MPC in this instance is near to 1 (0.97), it still complies with the economic principle that MPC is always positive but less than 1, meaning that when income increases, consumption increases as well, albeit not by the entire amount of the income increase. Consumers typically spend the majority of their extra money when the MPC is high (around 1). This can spur economic growth. This finding aligns with the (Olusola et al,2022, Ewane and Andigema, 2022 and Sekantsi, 2016), but contradicts Chioma,(2009) and Nwabueze, (2009), which showed no significant effect of GDP on consumption expenditure.

There are various ways to analyse the ECOWAS countries' long-term positive and strong relationship between inflation and total consumption.  A 1% increase in inflation causes a 0.108% increase in consumption over time in ECOWAS: According to research, inflation can boost growth in the short term, which may result in higher consumption. This correlation is due to the fact that inflation can boost economic activity, which in turn encourages investment and expenditure. According to the real balance effect, people may decide to spend more money now rather than later if inflation rises since it will cause the value of money to decline. The positive cointegration relationship between inflation and consumption appears to be a result of this impact in ECOWAS.

It's important to remember that the various economic systems and policies of ECOWAS member nations might affect how inflation and consumption are related. For example, certain nations might be more tolerant of inflation than others.The ECOWAS countries' consumers may be willing to pay higher prices for products and services because of habit formation or income impacts, as seen by the positive relationship between inflation and total consumption (Becker & Murphy, 1988).

Table 6: Mean Group Estimation: Error Correction Form

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| D.c | Coef. | Std.Err | z | P>|z| | [95% Conf. | Interval] |
| ec | |   |   |   |   |   |   |
| pr | -0.199038 | 0.142747 | -1.39 | 0.163 | -0.4788174 | 0.080741 |
| y | 0.5622304 | 0.4038691 | 1.39 | 0.164 | -0.2293385 | 1.353799 |
| SR | |   |   |   |   |   |   |
| ec | -0.237102 | 0.0741576 | -3.2 | 0.001 | -0.3824481 | -0.09176 |
|  pr | |   |   |   |   |   |   |
| D1. | 0.0213459 | 0.0156807 | 1.36 | 0.173 | -0.0093877 | 0.052079 |
| y |   |   |   |   |   |   |
| D1. | 0.1835044 | 0.084983 | 2.16 | 0.031 | 0.0169407 | 0.350068 |
| \_cons | 0.4164696 | 0.6304879 | 0.66 | 0.509 | -0.8192639 | 1.652203 |

The MG estimates are presented as a two-equation model, with the normalised cointegrating vector and the short-run dynamic coefficients. When comparing PMG and MG estimators, we find that PMG's long-run income elasticities are statistically significant and properly signed in the models. The MG estimate of inflation elasticity is bigger and properly signed, unlike the PMG model's estimate, which is not properly signed. The speed of adjustment estimations from each model show considerable differences in short-run dynamics (ø = -.03 for PMG and ø = -.24 for MG). The familiar Hausman test is used to determine the difference between these models.

**Table 7: Hausman mg pmg, sigmamore**

To determine whether or not the differences in the estimated coefficients between the two methods used are systematic, the result includes the estimates of the MG and PMG estimators. As a general rule, the null hypothesis (H₀: differences in estimated coefficients are not systematic) is rejected, and we infer that the differences in coefficients are systematic if the Hausman test's probability value chi-square is less than the 5% threshold of observed significance. The Hausman test is specified and estimated using Sigmamore. The estimated Hausman statistic is 3.36 and is distributed using X2(2). We conclude that since the probability value is greater than 0.05, we use the PMG estimator, which is efficient under the null hypothesis and is recommended.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  ---- Coefficients ---- |  |  |  |  |
|  | (b) (B) (b-B) sqrt(diag(V\_b-V\_B)) |  |
|  | mg pmg Diff S.E. |  |  |
|  pr | -.1990383 .1089184 -.3079568 .1689373 |  |
|  y | .5622304 .9773916 -.4151612 .5085091 |  |
|  b = consistent under Ho and Ha; obtained from xtpmg |
|  B = inconsistent under Ha, efficient under Ho; obtained from xtpmg  |
|  Test: Ho: difference in coefficients not systematic |  |
|  chi2(2) = (b-B)'[(V\_b-V\_B)^(-1)](b-B) |  |  |
|  = 3.36 |  |  |  |  |

 Prob>chi2 = 0.1862

The estimated Hausman statistic is 3.36 and is distributed using X2(2). We conclude that since the probability value is greater 0.05, we use PMG estimator, which is efficient under the null hypothesis, is recommended.

Table 8: Dynamic Fixed Effects Regression: Estimated Error Correction Form

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| D.c | | | Coef. | Std.Err | z | P>|z| | [95% Conf. | Interval] |
| ec | |  |  |  |  |  |  |  |
| pr | | | -0.19904 | 0.142747 | -1.39 | 0.163 | -0.47882 | 0.080741 |
| y | | | 0.56223 | 0.403869 | 1.39 | 0.164 | -0.22934 | 1.353799 |
| SR | |  |  |  |  |  |  |  |
| ec | | | -0.2371 | 0.074158 | -3.2 | 0.001 | -0.38245 | -0.09176 |
|  pr | |  |  |  |  |  |  |  |
| D1. | | | 0.021346 | 0.015681 | 1.36 | 0.173 | -0.00939 | 0.052079 |
| y | | |  |  |  |  |  |  |
| D1. | | | 0.183504 | 0.084983 | 2.16 | 0.031 | 0.016941 | 0.350068 |
| \_cons | | | 0.41647 | 0.630488 | 0.66 | 0.509 | -0.81926 | 1.652203 |

The dynamic FE estimator, similar to the PMG estimator, requires comparable coefficients for the cointegrating vector across all panels. The FE model requires the speed of adjustment and short-run coefficients to be comparable. The coefficients in the dynamic FE model are properly signed and comparable to PMG estimates. Baltagi, Griffin, and Xiong (2000) identified a simultaneous equation bias in FE models due to endogeneity between the error term and the lagged dependent variable.

Table 9: Hausman mg dfe, sigmamore

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  ---- Coefficients ---- |  |  |  |  |
|  | (b) (B) (b-B) sqrt(diag(V\_b-V\_B)) |  |
|  | mg dfe Difference S.E. |  |  |
|  pr | -.1990383 -.1085578 -.0904805 1.291471 |  |
|  y | .5622304 .728713 -.1664827 3.662754 |  |
|  b = consistent under Ho and Ha; obtained from xtpmg |
|  B = inconsistent under Ha, efficient under Ho; obtained from xtpmg |
|  Test: Ho: difference in coefficients not systematic |  |
|  chi2(2) = (b-B)'[(V\_b-V\_B)^(-1)](b-B) |  |  |
|  = 0.01 |  |  |  |  |

 Prob > chi2 = 0.9973

The estimated Hausman statistic is .01 and is distributed using X2(2). We conclude that since the probability value is greater 0.05, we use dfe estimator, which is efficient under the null hypothesis, is recommended.

.Table 10: Hausman dfe pmg, sigmamore

|  |
| --- |
|  | (b) (B) (b-B) sqrt(diag(V\_b-V\_B)) |
|  | dfe pmg Difference S.E. |  |
|  pr | .1089184 -.1085578 .2174762 .465596 |
|  y | .9773916 .728713 .2486786 .517759 |
|  b = consistent under Ho and Ha; obtained from xtpmg |
|  B = inconsistent under Ha, efficient under Ho; obtained from xtpmg |
|  Test: Ho: difference in coefficients not systematic |
|  chi2(2) = (b-B)'[(V\_b-V\_B)^(-1)](b-B) |  |
|  = 0.33 |  |  |  |
|  Prob>chi2 = 0.8474 |  |  |  |

The estimated Hausman statistic is 0.33 and is distributed using X2(2). We conclude that since the probability value is greater 0.05, we use PMG estimator, which is efficient under the null hypothesis, is recommended.

Table 11: The Results of Pooled Mean Group Regression (Short run estimates).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Country | ECT | pr | y | con |
| Nigeria | 0.012876 | -0.1465 | 0.067876 | 0.030396 |
|  | (0.0427) | (0.0339) | (0.0021) | (0.003) |
| Ghana | -0.32747 | -0.10583 | 0.66389 | 0.178328 |
|  | (0.0003) | (0.0011) | (0.000) | (0.0011) |
| Sierra leone | -0.07176 | -0.01481 | 0.196368 | 0.044155 |
|  | (0.0001) | (0.6621) | (0.0003) | (0.0001) |
| Benin | -0.00696 | -0.01603 | 0.076322 | 0.007008 |
|  | (0.000) | (0.000) | (0.000) | (0.000) |
| Niger | -0.04328 | 0.144997 | -0.03816 | 0.015926 |
|  | (0.000) | (0.0002) | (0.0002) | (0.000) |
| Cote d Ivoire | -0.11003 | -6.11272 | 1.730181 | 0.098713 |
|  | (0.0002) | (0.1555) | (0.0227) | (0.0031) |
| Senegal | 0.006004 | -0.06713 | 0.11442 | 0.008203 |
|  | (0.0004) | (0.0017) | (0.000) | (0.000) |
| Cape Verde | -0.00994 | -0.19066 | 0.14015 | 0.037168 |
|  | (0.0444) | (0.4953) | (0.0015) | (0.000) |
| Burkina Faso | 0.014882 | -0.1243 | 0.323791 | 0.007182 |
|  | (0.0003) | (0.0288) | (0.000) | (0.000) |

We estimated the error correction model to determine the short-term dynamic relationship since the variables under investigation are cointegrated, and the results are shown in Table 10. In every country and for the whole panel, the point estimates for the error correction term are negative and statistically significant, with the exception of (Nigeria, Senegal and Burkina Faso) which have a positive sign. It suggests that adjustments to deviations from the long-run path are not occurring, that is, not behaving as theory would predict; instead of the variable to converge toward equilibrium, it will diverge from equilibrium. As expected, income and price have a considerable impact on consumption.

Total consumption's elasticity ranges from -0.0389 in Niger to 1.732 in Côte d'Ivoire. Income has a strong positive impact on consumption in eight countries (Nigeria, Ghana, Sierra Leone, Benin, Côte d'Ivoire, Senegal, Cape Verde, and Burkina Faso), with a negative effect in Niger.

Our findings are consistent with the Keynesian Absolute Income Hypothesis and other empirical investigations (Olusola etal, 2022, Ewane and Andigema, 2022 and Sekantsi, 2016). With the exception of Niger, every country has a positive and significant estimated coefficient for the income variable.The data for Niger contrast, demonstrating a negative and considerable influence of income on consumption Chioma (2009) and Nwabueze, (2009).

In the short run, consumption and inflation have an inverse relationship in ECOWAS countries, meaning that consumption falls as inflation rises. There are multiple reasons for this relationship: Consumers' purchasing power is diminished by inflation, which results in lower consumption (Fisher, 1930). Due to uncertainty about future costs brought on by high inflation, customers may postpone or cut back on their consumption (Lucas, 1972). During times of economic expansion as opposed to recession, the effect of inflation on consumption may vary. The link between inflation and consumption can be influenced by how well monetary policy controls inflation. The findings was collaborate with (Alem and Soderbo 2010).

**5. CONCLUSION AND POLICY RECOMMENDATIONS**

In this study, we looked at how total consumption expenditures in 9 ECOWAS countries were affected by income and inflation rate between 1991 and 2023. The ramifications of inflation on an economy are extensive. The uncertainty brought about by a variable inflation rate is one of the most important effects of inflation since it can either raise or decrease consumer purchasing power.  We used the advanced auto-regressive distributed lag panel estimation method that was created especially to address the main econometric issues that plagued earlier research on slope heterogeneity. Our empirical approach uses the pooled mean group, mean group and dynamic fixed effect estimator created by Pesaran and Smith to address the problem.

According to the whole-panel data, total consumption is often positively impacted by income and negatively impacted by inflation rate. Nonetheless, the evidence at the country level reveals significant cross-country shows that income has a strong positive impact on consumption in eight countries (Nigeria, Ghana, Sierra Leone, Benin, Côte d'Ivoire, Senegal, Cape Verde, and Burkina Faso), with a negative effect in Niger. This evidence supports the Keynesian absolute income theory and demonstrates that income is the principal driver of total consumption growth in both the short and long run.

Additionally, we discovered that there is a significant and negative effect of cross-country variation in the eight countries (Nigeria, Ghana, Sierra Leone, Benin, Côte d'Ivoire, Senegal, Cape Verde, and Burkina Faso) with a negative effect on Niger. It may be as a result of consumers' purchasing power being diminished by inflation, which results in lower consumption (Fisher, 1930), and due to uncertainty about future costs brought on by high inflation, customers may postpone or cut back on their consumption (Lucas, 1972).

The study's findings unequivocally demonstrate that there is a cross-national and country-specific relationship between inflation, income, and consumption. Additionally, we discovered that there is significant cross-country variation in the positive relationship between consumption and income. This evidence supports the Keynesian absolute income hypothesis and demonstrates that c income is the key driver of total consumption growth in both the short and long term, even though our main focus is on the relationship between inflation and consumption.

The study's findings suggest a few tenable explanations for the character of the interaction between consumption and the inflation price. The following suggestions are made in light of the study's empirical findings. To keep inflation under control and encourage economic expansion, central banks and fiscal authorities must work together. Overall, ECOWAS's positive inflation-consumption link indicates that authorities should carefully control inflation to strike a balance between price stability and economic growth. A high MPC suggests that consumers typically spend the majority of their extra cash, which can spur economic expansion. With the assistance of this data, policymakers can create stimulus plans or tax breaks that will boost spending and spur economic expansion.

**REFERENCES**

Adeneye, O.A. (2022). The impact of monetary policy on price stability in Nigeria, (1999 –

 2021) *International Journal of Economics and Management Sciences 1(2), 36-56*

Agalega, E. & Acheampong, P. (2013). The Impact of Inflation, Policy Rate and Government Consumption Expenditure on GDP Growth in Ghana. A Co-Integration Approach. *European Journal of Business and Management.*5 (15),170–185.

Alem, Y., & Sodarbom, M. (2010). Household Level Consumption in Urban Ethiopia: The Impact of Food Price Inflation and Idiosyncratic Shocks. *Department of Economic, University of Gothenbory Sweden, School of Economic, Addis Ababa University of Ethiopia*.

Amath Ndiaye. (2021). Exchange Rates and Inflation Rates Convergence in ECOWAS. *Modern Economy*.12(12),1726-177.

Baltagi, B.H., Griffin, J.M., and Xiong, W., (2000). To pool or not to pool: homogeneous versus heterogeneous estimators applied to cigarette demand. *Review of Economics and Statistics.*82(1),117–126.

Barro, R. J. (1995). Inflation and Economic Growth. *Bank of England Quarterly Bulletin*, Vol35. Pp166–179.

Becker, G.S. & Murphy, K. M. (1988). A Theory of Rational Addiction. *Journal of Political Economy*.*96(4)*, *675*–*700*.

Blackburne III, E. F., & Frank, M. W. (2007). Estimation of nonstationary heterogeneous panels. *The Stata Journal*.*7 (*2), 197–208.

Bruno, M. & Easterly, W. (1998). Inflation Crises and Long-Run Growth. *Journal of Monetary Economics*.*41(1)*, *3*–*26*.

Bryan, M. F., & Ventaku, G. (2001). The Curiously Different Inflation Perspectives of Men and Women. *Economic Commentary, Federal Reserve Bank of Cleveland*.

Chimobi O. P. (2010). Inflation and Economic growth in Nigeria. *Journal of Sustainable Development,3(2)*,159-166.

De Wet, W. A. (2003). Thinking Like a Governor: Central Banking under an Inflation Target. *The South African Journal of Economics.71(4)*,792-805.

Ewane, E.B & Andigema, S. A. (2022). Inflation Rate Volatility and Household Final Consumption Expenditure: Evidence from Cameroon. *Journal of Economics, Management and Trade*.*28(10 ),*89–99.

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica.46 (6),*1251–1271.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in Heterogeneous Panels. *Journal of Econometrics*.*115*(1), 53–74.

Katona, G. (1975). Psychological Economics.[*Journal of Behavioral Economics*](https://ideas.repec.org/s/eee/beheco.html)*, Elsevier*,

 5(1), 203-205.

Kershoff, G. J., & Smit, B. W. (2002). Conducting Inflation Expectation Surveys in South Africa. *The South African Journal of Economics*.*70(3),*205–212.

Keynes, J. M. (1936). The General Theory of Employment, Interest and Money. In *3* (p. 141). Palgrave Macmillan.

Lucas, Robert E., J. (1972). Expectations and the neutrality of money. *Journal of Economic Theory*.4(2),103 -124.

Manasseh, C.O, Abada, F.C, Ogbuabor, J.E, Onwumere. J.U, Urama, C.E & Okoro, E. O. (2018). The Effects of Interest and Inflation Rates on Consumption Expenditure: Application of Consumer Spending Model. *International Journal of Economics and Financial Issues, Econjournals.8(4),*32–38.

Mishkin, F. S. (2004). The Economics of Money, Banking and Financial Markets. *7th Ed.). Addison-Wesley Publishing Company, Inc. Science Research*.*2(8),*179-183..

Modigliani, F. (1986). “Life-cycle, individual thrift, and the wealth of nations”,. *American Economic Review*.*76* (3), 297–313.

Ndiaye, M. B., & Korsu, R. D. (2014). The Quest for a Monetary Union in ECOWAS: An Econometric Test for Convergence of Countries in Private Sector Development in Africa. *Springer 1994*, Pp 31–59.

Nwabueze J. C. (2009). Causal Relationship between Gross Domestic Product and Personal Consumption Expenditure of Nigeria. *African Journal of Mathematics and Computer* 2, 179-183

Olusola, B. , Chimezie, M. , Shuuya, S. & Addeh, G. (2022). The Impact of Inflation Rate on Private Consumption Expenditure and Economic Growth—Evidence from Ghana. *Open Journal of Business and Management.10 (4),*1601–1646. doi: 10.4236/ojbm.2022.10408

Osuji, O. (2020). effect of inflation on household final consumption expenditure in Nigeria. *Journal of Economics and Development Studies*.*8(1),*104–111.

Ouedraogo, N. S. (2013). Energy Consumption and Economic Growth: Evidence from the Economic Community of West African States (ECOWAS). *Energy conomics.36(c),*637–647. https://doi.org/10.1016/j.eneco.2012.11.011

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*.*94(*446),621–634.

Pesaran, M. H., Y. Shin, & Smith, R. P. (1997). Estimating long-run relationships in dynamic heterogeneous panels. *DAE Working Papers Amalgamated Series 9721.*

Pesaran, M.H. & Smith, R. P. (1995). Estimating Long-Run Relationship from Dynamic Heterogenous Panels. *Journal of Econometrics*.*68(1),*79-113..

Pesaran, M. H. (2006). Estimation and Inference in Large Heterogeneous Panels with a Multifactor Error Structure. *Econometrica*.*74,*967-1012. https://doi.org/10.1111/j.1468-0262.2006.00692.x

Pesaran, M. H. (2007). A Simple Panel Unit Root Test in the Presence of Cross Section Dependence. *Journal of Applied Econometrics..22(2),*265–312.

Rousseau, P.L. & Wachtel, P. (2002). Inflation Thresholds and the Finance – Growth Nexus. *Journal of International Money and Finance*.*21(6),*777–793.

Saad, W. (2011). An econometric study of the private consumption function in Lebanon. *International Research Journal of Finance and Economics*.*61*, 29–41.

Sarafidis, V. and Wansbeek, T. (2012) Cross-Sectional Dependence in Panel Data Analysis.

*Econometric Reviews,* 31(5), 483-531.

Sekantsi, L. P. (2016). Determinants of Real Private Consumption Expenditure in Lesotho. *European Journal of Economics and Management*.*3,*72-89.

Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics*.*70*(1),65–94.

Wicksell. (2006). on the Classical Theories of Money, Credit, Interest and the Price Level: *American Journal of Economics and Sociology*. *58(3),*435–457.

Wilson, C. E., & Howard, D. M. (1978). Public Perception of Media Accuracy. *Journalism Quarterly*.*55(1),*73–76. https://doi.org/10.1177/107769907805500110

World Bank (2022) Worldwide national account Indicators |DataBank. World Bank.