

Inflation and Household Income in Nigeria: An Empirical Examination

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Abstract

Review Article

The study investigates inflation and household income in Nigeria using secondary data sources from the publication of the Central Bank Statistical Bulletin and world development indicators from 1981 to 2022. The major objective of this study is to analyze the effects of inflation and household consumption expenditure on household income in Nigeria. To achieve the objectives, the study employed the auto-regressive distributive lag model (ARDL). The results of our findings reveal that inflation has a positive and significant effect on household income in the short-run and long-run in Nigeria. Also, household consumption expenditure indicates a negative/insignificant effect in the short run and a positive/significant effect in the long run. The finding also reveals that there is a unidirectional relationship between inflation and household income in Nigeria, and there is no causal effect between household consumption expenditure and household income. The study therefore recommended that social safety net programs should be strengthened to provide support to vulnerable households during periods of high inflation. This may include cash transfer programs, food subsidies, and access to affordable healthcare. Also, there is a need for improved data collection and analysis on household income and inflation. This will enable policymakers to make more informed decisions and develop targeted policies to mitigate the effect of inflation on income of an individual.

Keywords: inflation, household income, household consumption expenditure, ARDL model, Nigeria.

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1.0 INTRODUCTION

The exploration of the connection between inflation and economic growth has been the focus of much theoretical and empirical investigation. This is because comprehending the inflation-growth link holds great significance for monetary policy (Sleeting et al., 2013). The traditional view is that the relationship between inflation and economic growth is linear. The effect of inflation can be neutral, positive, or negative depending on whether money is super-neutral, a substitute for capital, or

complementary to capital. The main goal of macroeconomic policy is to achieve a mix of strong economic development and a low and steady inflation rate (Seleteng et al., 2013; Vinayagathan, 2013). Excessive inflation has negative effects on the economy, including undesirable redistribution of wealth and negative impact on welfare (Eggoh and Muhammad, 2014). Negative inflation, as suggested by Friedman (1969), is not considered a policy option because a certain level of inflation is necessary to facilitate economic activity (Seleteng et



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al., 2013). Low inflation stimulates economic growth by encouraging investment and optimising the utilisation of productive resources (Ahortor et al., 2011).

Household income is the combined gross income earned by all individuals aged 15 and above in a household, regardless of their relationship. This encompasses several forms of income, such as wages, salaries, self-employment earnings, Social Security benefits, pensions, retirement income, investment income, welfare payments, and income from other sources. It is a significant economic indicator that is utilised to evaluate the financial health of a family. Governments and business entities frequently employ it for diverse analysis and policy objectives.

Various economic theories elucidate the correlation between inflation and family income. The study examines the influence of inflation on various income categories within households, yielding evidence of the correlation between inflation and income disparity. The Household Costs Indices (HCIs) quantify the necessary adjustments in the nominal disposable income of various household demographics in order to accommodate fluctuations in costs. This provides a visual representation of the actual financial strains experienced by households.

In addition, inflation can worsen income disparity by raising the prices of necessary products and services, so reducing the ability of low-income people to buy them. Moreover, families have varying patterns of consumption when it comes to goods and services, resulting in differing levels of sensitivity to inflation. Low-income households, in particular, are significantly impacted by inflation. Policymakers must carefully assess the effects of inflation on income inequality and economic growth, since it can have significant redistributive consequences and impede market participation and the development of human capital. Hence, the correlation between inflation and family income is an intricate and diverse matter, impacted by several economic circumstances and household characteristics.

In Nigeria, inflation has had a notable impact on household income, resulting in a decrease in buying power and household expenditure. The elevated

inflation rate has led to a decline in the actual yearly growth rate of household consumption spending, specifically affecting individuals with low incomes and the more susceptible portions of the population. Inflation has also been associated with an increase in product costs, necessitating a more logical approach to spending and a decrease in the overall quality of life. Therefore, after identifying the difficulties of the study, the objective is to investigate the impact of inflation on family income by utilising gross domestic product as a proxy for household income. The precise aims are:

This study investigated the impact of household consumer spending on household income in the Nigerian economy.

- i. Analyse the impact of inflation on household income in the Nigerian economy.
- ii. Established the causal link among household consumption, inflation, and household income in Nigeria.

2.0 Review of Existing Literature

2.1 Conceptual Review

Inflation is a ubiquitous phenomenon in all economies. Inflation refers to the persistent rise in the overall price level, which can result in reduced productivity and hinder economic growth. Money serves as a means of trading goods and services. The value of money may be influenced by inflation, which in turn affects people's capacity to get goods and services (Jacobs, Perera & Williams 2014). According to Francis (2015), inflation can increase when there is a large amount of money in circulation, causing the value of each unit to decrease. Inflation is a crucial factor in economies that are developed, developing, or underdeveloped. Inflation leads to a redistribution of income among various segments of the population and also affects the per capita GDP of the economy.

Asekunowo (2016) states that the persons most adversely affected by inflation are those who are unable to adapt to the current inflationary conditions of the economy while still maintaining a minimum average quality of life. According to Chand (2013),

the producing class, which includes agriculturists, manufacturers, and merchants, benefit at the cost of salaried and white-collar positions. Several economists, such as Shahor (2011) and Sands (2016), advocate for moderate inflation as it promotes economic growth in a country. According to Haq, Nazil, and Meilke (2008), the economic literature and many schools of thought on inflation may be categorised into two main categories: quality theories of inflation and quantity theories of inflation. Many theories combine elements from both areas. The authors emphasised that the quality theory of inflation is based on the assumption that a seller will accept currency with the expectation of being able to exchange it later for desirable goods as a buyer. On the other hand, the quantity theory of inflation is based on the relationship between the money supply, its velocity, and exchanges.

Household income is the collective earnings of all individuals in a household within a certain timeframe. The revenue encompasses a range of sources, including wages, salaries, self-employment earnings, rental proceeds, investment gains, and government disbursements. The notion of household income is extensively employed in the fields of economics and social sciences to gauge the economic prosperity and financial assets of families. It functions as a significant gauge of a household's capacity to fulfil its consumption requirements, accumulate savings for the future, and allocate resources towards education, healthcare, and other essential needs.

Household income and its determinants have been thoroughly examined by researchers. A significant research on this issue was undertaken by Burkhauser, Feng, Jenkins, and Larrimore in 2011. A thorough methodology was devised to quantify and examine the fluctuations in household income inside the United States. Their study highlighted the need of taking into consideration various sources of income and accounting for the makeup of households when comprehending income disparity and mobility. Another significant analysis was conducted by Atkinson, Piketty, and Saez in 2011. An analysis was conducted on the long-term distribution of family income in different nations. Their research emphasised the growing accumulation of wealth

among the highest earners and the escalating disparity in income across various nations. These studies, in addition to numerous others, have enhanced our comprehension of the notion of household income and its ramifications for people, families, and society at large.

The correlation between inflation and family income is a subject of great importance in the field of economics and public policy. Inflation, defined as a long-term rise in the overall price level of goods and services in an economy, may impact the buying power of families and the distribution of income in a community. An in-depth comprehension of the influence of inflation on family income is of utmost importance for policymakers, economists, and anyone who aim to grasp the intricacies of economic prosperity and the distribution of wealth. This study seeks to offer a thorough examination of the current body of research regarding the impact of inflation on family income. Additionally, it attempts to present a comparative analysis of the many theoretical viewpoints and empirical discoveries in this field.

The relationship between inflation and family income has been examined through a range of economic theories and empirical research. The idea of Purchasing Power Parity (PPP), for instance, provides insights into how fluctuations in the price level (inflation) can affect exchange rates and, consequently, affect the purchasing power of family income (Taylor, 2002). The Cost-Push and Demand-Pull inflation theories offer useful frameworks for comprehending how alterations in production costs and aggregate demand might influence family income by affecting prices and wages (Blanchard, 2008; Mankiw, 2014).

Empirical research have also enhanced our comprehension of the correlation between inflation and family income. The study conducted by Johnson and Parker (2018) investigates the influence of inflation on various income brackets, emphasising how inflation can lead to unequal impacts that disproportionately affect households with lower incomes. Kim and Lee (2016) conducted research examining the income and substitution consequences of inflation. Their study provides insight into how fluctuations in price levels might impact household income and consumption habits.

2.2 Theoretical Framework

Economic theories such as the Phillips Curve, Rational Expectations Theory, and Modern Monetary Theory (MMT) provide alternative perspectives for examining the correlation between inflation and family income (Akerlof & Yellen, 2008; Romer, 2012; Kelton, 2020). These ideas offer useful insights into the mechanisms by which inflation might affect household income, including its impact on employment, wage bargaining, consumer expectations, and general economic stability.

The Theory of Purchasing Power Parity (PPP)

The Purchasing Power Parity (PPP) hypothesis states that fluctuations in the price level (inflation) of one nation compared to another can result in alterations in exchange rates, which can subsequently impact family income. When the inflation rate in a nation is greater than that of its trade partners, it is anticipated that the country's currency would devalue. This would result in increased costs for imports and might potentially decrease the buying power of households. On the other hand, a decrease in inflation might result in the strengthening of the currency and an increase in the ability to buy goods and services.

The Phillips Curve

The Phillips Curve illustrates a negative correlation between inflation and unemployment, indicating that as inflation increases, unemployment decreases and vice versa. Fluctuations in inflation can have an influence on household income by influencing the levels of employment and wage rates. During periods of low unemployment and strong inflation, workers may see a rise in their nominal earnings, which has the potential to enhance household income. On the other hand, if real wages do not grow at the same rate as price increases, more inflation might lead to a decrease in real earnings.

The Rational Expectations Theory

According to this idea, individuals develop

anticipations on future inflation by considering all accessible information. These expectations have the potential to shape their behaviour, encompassing choices pertaining to work, investing, and spending habits. Rational expectations influence how families negotiate pay adjustments and predict changes in their real income caused by inflation.

The Absolute Income Theory

The absolute income hypothesis, introduced by John Maynard Keynes in 1936, posits that the level of current consumption expenditure is determined by the level of current disposable income. According to this theory, as income increases, consumption spending also increases, but at a diminishing pace. According to the idea, income is the primary factor that determines consumer spending. Therefore, it is generally believed that consumption would rise when income rises, but not always at a same rate. Put simply, the Marginal propensity to spend occasionally grows as income rises, but at a decreasing pace. The relative income theory, proposed by Duesenberry in 1949, states that the level of relative income is the primary factor influencing a household's consumption spending. Thus, an individual's consumption behaviour is predominantly shaped by their neighbours, with whom the consumer perceives themselves to be in competition.

2.3 Empirical Literature

Ekong and Effiong (2020) conducted a study to examine the economic factors that influence household consumption expenditure in the West African sub-region, specifically focusing on Nigeria and Ghana. The study obtained data from the World Bank database spanning from 1999 to 2018. The study utilised fixed effects least squares dummy variable panel regression analysis and discovered that gross national income and inflation rate had a positive and substantial influence on household consumption expenditure. The findings also indicated that the interest rate and savings had a detrimental and substantial effect on household consumption expenditure. The correlation between

income and consumer spending, demonstrating a positive and substantial influence, aligns with the Keynesian perspective. Conversely, the negative impact of interest rates on consumer spending aligns with the intertemporal substitution effect.

Sugiarto and Wisnu (2020) examined the factors that influence the amount of money spent by households in different regions of Indonesia. The study employed a dynamic panel data regression model utilising the First-difference Generalised Method of Moments (FD-GMM) technique. The analysis was done on data collected from 33 provinces throughout the period of 2010-2019. FDGMM application yields accurate and reliable estimations. The parameter significance test findings indicate that lagged real HFCE, real gross regional domestic product (GRDP), and government spending have a substantial and positive influence on real HFCE. Meanwhile, both the inflation and unemployment rates saw a substantial and adverse influence.

Ashakah (2019) analysed the factors that influence the total amount of money spent on goods and services in Nigeria from 1981 to 2015. The study employed the ordinary least squares estimation approach to estimate an error correcting model. The findings indicated that income had a substantial and beneficial influence on the overall expenditure on goods and services in Nigeria. Employers are advised to regularly raise workers' pay in accordance with fluctuations in the country's macroeconomic and microeconomic factors.

In their study, Najid and Uma-Tul (2012) investigated the correlation between inflation and gross domestic product (GDP) in Pakistan from 1971 to 2011. The investigation utilised the Granger Causality test and the Ordinary Least Square (OLS) approach. The inquiry utilised gross domestic product (GDP) as the dependent variable, while the inflation rate (INFR) served as the independent variable. The empirical findings from the Granger causality test indicate that there is a causal relationship between GDP and inflation, with GDP being the cause and inflation being the effect. The OLS results indicate a positive correlation between inflation and economic growth in Pakistan.

Ezeibekwe (2020) employed the vector error

correction model to ascertain the impact of fluctuations in the inflation rate on the efficacy of monetary policy instruments in stabilising the Nigerian economy and fostering investment. The study's findings indicate that the effect of interest rates on investment is contingent upon the degree of inflation. Moreover, the impact of interest rates on investment diminishes as the inflation rate rises, indicating that monetary policy instruments such as the monetary policy rate (MPR) are effective tools for stabilising the economy when inflation rates are declining, but they lose their significance when inflation rates are on the rise. The study found that the influence of the money supply goal on investment is not influenced by the amount of inflation. This implies that monetary policy instruments, including open market operations, are effective in both periods of economic growth and decline.

Inim et al. (2020) investigated factors influencing inflation in Nigeria, apart from money supply, by employing the Auto Regressive Distributed Lag (ARDL) approach. The study utilised quarterly data from January 1999 to December 2018. Their research revealed that inadequate infrastructure, fluctuating currency rates, political instability, corruption, and the imposition of double taxes all have a substantial impact on inflation. The results demonstrated a causal correlation between these additional influencing factors and inflation. The ARDL analysis revealed a statistically significant association in both the long-run and short-run.

Osuji (2020) conducted an empirical analysis to investigate the impact of inflation on household final consumption spending in Nigeria between 1981 and 2018. The study employed the ordinary least square econometric approach. The study revealed a statistically significant positive correlation between inflation and household consumption spending in Nigeria over a lengthy period of time.

Adaramola & Dada (2020) analysed the impact of inflation on the growth potential of the Nigerian economy. The study results revealed that inflation and real exchange rate have a considerable negative effect on economic growth, but the interest rate and money supply have a positive and significant effect on economic growth. The causality finding demonstrates the presence of one-way links between

the interest rate, exchange rate, government consumption expenditures, and gross domestic product. However, there is no causal relationship found between inflation, the degree of openness, and gross domestic product.

Idris and Bakar (2017) conducted a study to examine the inflationary trend in Nigeria and assess its influence on economic development. The study utilised a descriptive methodology and deployed charts to illustrate the inflationary pattern and GDP growth, aiming to get a deeper comprehension of how Nigeria's inflation rates impact the desired level of economic growth. The study determined that Nigeria's present inflationary trajectory has an adverse impact on sustainable growth and development. Consequently, one of the prerequisites for achieving the required level of growth in Nigeria is to regulate the excessive escalation of the inflation rate. Therefore, they suggested the necessity of developing an appropriate framework that would incentivize local producers to participate in creative economic endeavours. This will establish a foundation for fostering innovation and the production of goods with a competitive edge in the global market. The multiplier effects will unquestionably enhance the export volume of the expanding economy, elevate productivity levels and competitive forces, mitigate exchange rate volatility, boost job creation, foster income growth and economic well-being, and significantly contribute to fiscal responsibility and macroeconomic expansion.

3.0 RESEARCH METHODOLOGY

3.1 Research Design

This study employed an ex post facto research design. The use of secondary data, which cannot be altered, was justified as the basis for selecting the research strategy.

3.2 Model Specification

To examine if inflation is detrimental to Nigeria's household income, the study modifies the model developed by Idris & Suleiman (2019) and Inyama (2013). Following their models, the model for this

study is as follows

$$PCIGR = f(INF, HEC, INT, EXGR, GCGR) \dots\dots\dots (1)$$

Thus, putting equation (1) In mathematical form or model, it therefore becomes;

$$PCIGR_t = \beta_0 + \beta_1 INF_t + \beta_2 HEC_t + \beta_3 INT_t - \beta_4 EXGR + \beta_4 GCGR \dots\dots\dots (2)$$

To capture the stochastic form (error term) of the model in equation (2), the model is therefore put into econometric form. Thus, express as below;

$$PCIGR_t = \beta_0 + \beta_1 INF_t + \beta_2 HEC_t + \beta_3 INT_t - \beta_4 EXGR + \beta_4 GCGR \dots\dots\dots (3)$$

Where;

PCIGR= Per Capita Income Growth Rate used as a proxy for Household Income

INF = Inflation

HEC = Household Consumption Expenditure Growth Rate

INT = Interest Rate

EXGR = Exchange Rate Growth Rate

GCGR = Gross Fixed Capital Growth Rate

ε_t = Error term or disturbance term

t = Time series value

B_0 = The intercept of the model or constant parameter

$\beta_1, \beta_2, \beta_3, \beta_4$ = Partial regression coefficient

A’Piori Expectation

This criterion is concerned with determining the consistency of the parameters estimate with the signs and magnitude. As such, it that the parameters estimate in the study must be consistent in signs and magnitude. It also involves an examination of the signs and magnitude of the estimated parameters to determine the conformity with theoretical expectation. $\beta_1, \beta_2, \beta_3 > 0$, while $\beta_4 < 0$.

3.3 Nature and Source of Data

In this study, yearly data which spanned the period 1981-2022 was used for the empirical investigation. The data were obtained from the Central Bank of Nigeria's Statistical Bulletin.

3.4 Method of Data Analysis

The data was subjected to analysis using the ARDL estimate method developed by Perasan and Shin (1999). The ARDL model, which was previously utilised in research conducted by Peraran, Shin, and Smith (2001), has remained a popular and effective dynamic data methodology. Unlike other simultaneous equation models, this model is believed to be successful at estimating both long-term and short-term connections inside a single model. The inclusion of mixed integrated variables in orders zero and one is necessary for the empirical validity of the ARDL model. Moreover, it is often considered to be exceptionally appropriate for conducting observations on a tiny scale.

Furthermore, this study conducted other pre-estimation tests, such as bounds co-integration tests and unit root testing, in addition to the ARDL. The

Dickey-Fuller unit root test (1981) was principally employed in this work to assess the stationary nature of the variables. Descriptive statistics were used to examine the summary statistics and their distribution during the research period.

3.5 The Econometric Analysis

These are tests set by the econometric theory and aimed at investigating whether the assumptions of the ordinary least square are satisfied or not. For the purpose of this research, the study will only test for serial correlation, multicollinearity, normality test and heteroskedasticity.

4.0 DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Data Analysis

4.1.1 Unit Root Test of Stationarity

The study employed the Augmented Dickey Fuller test with the Akaike Information Criterion (AIC) to conduct the unit root test. The outcome is displayed in Table 1.

TABLE I: Stationarity Test using ADF Statistics

		<u>At Level</u>					
		PCIGR	INT	INF	GCGR	EXGR	HCE
With Constant	t-Statistic	-4.7143	-2.4980	-2.5189	-4.3407	-6.0532	-6.9918
	Prob.	0.0004	0.1239	0.1189	0.0013	0.0000	0.0000
		***	n0	n0	***	***	***
With Constant & Trend	t-Statistic	-4.9673	-2.3189	-3.8107	-4.2943	-6.2600	-7.0505
	Prob.	0.0013	0.4142	0.0262	0.0078	0.0000	0.0000
		***	n0	**	***	***	***
Without Constant & Trend	t-Statistic	-6.5474	-0.5439	-1.2575	-1.0263	-5.2577	-6.3580
	Prob.	0.0000	0.4748	0.1883	0.2690	0.0000	0.0000
		***	n0	n0	n0	***	***
		<u>At First Difference</u>					
		d(PCIGR)	d(INT)	d(INF)	d(GCGR)	d(EXGR)	d(HCE)
With Constant	t-Statistic	-10.4842	-2.5614	-6.4510	-7.8384	-7.2257	-3.1289
	Prob.	0.0000	0.1098	0.0000	0.0000	0.0000	0.0347
		***	n0	***	***	***	**

With Constant & Trend	t-Statistic	-10.8066	-2.9232	-6.3865	-7.7690	-7.1340	-3.0160
	Prob.	0.0000	0.1669	0.0000	0.0000	0.0000	0.1441
		***	n0	***	***	***	n0
Without Constant & Trend	t-Statistic	-10.4029	-2.6185	-6.5398	-7.9184	-7.3254	-3.1931
	Prob.	0.0000	0.0102	0.0000	0.0000	0.0000	0.0024
		***	**	***	***	***	***

The Unit root test determines the level at which the variables used in the study become stationary and suitable for analysis. The Augmented Dickey-Fuller unit root test was performed and the outcome is provided in Table 1. Upon doing the unit root test, it was determined that the variables exhibit a combination of stationary behaviour, with some being of order I(0) and others of order I(1).

4.1.2 Correlation Analysis

In statistics, any statistical relationship between two

random variables or bivariate data, whether causal or not, is referred to as correlation or dependency. While correlation truly refers to the degree of linear association between two variables, it is commonly used to refer to any statistical relationship. The linear relationship between two variables can be seen via the Pearson correlation coefficient. The coefficient has a range of -1 to 1. The values 0 and -1 denote no link, respectively, and -1 and 1 respectively, imply a perfect negative connection. Therefore, the stronger the relationship between the two variables, the further the correlation coefficient deviates from zero.

Table 2: Correlation Result

	PCIGR	INT	INF	GCFGR	EXRGR	HCE
PCIGR	1.000000	-0.066616	0.341983	0.029468	-0.139267	-0.058905
INT	-0.066616	1.000000	0.381573	0.401068	-0.113254	0.122304
INF	0.341983	0.381573	1.000000	0.489871	-0.120603	-0.001643
GCFGR	0.029468	0.401068	0.489871	1.000000	0.005953	-0.099854
EXRGR	-0.139267	-0.113254	-0.120603	0.005953	1.000000	-0.192335
HCE	-0.058905	0.122304	-0.001643	-0.099854	-0.192335	1.000000

The linear relationship between the independent and dependent variables used in the investigation is displayed in Table 2. Table 2 shows a negative correlation between PCIGR and INF, GCFGR. Therefore, it suggests that per capita income rises in

response to increases in INF and GCFGR. There is also a negative correlation between PCI and EXRGR, HCE, and INT. Since none of the explanatory variables have a correlation coefficient larger than or equal to one, there is no evidence of multicollinearity

among variables.

4.1.3 Lag Length Selection Criteria

Table 3 presents the results of the lag order selection criterion for the model that examines the correlation

between household income and inflation, using the Akaike Information Criterion. The maximum lag of two is the initial criterion employed in the choosing of lag length. An asterisk indicates the lag order specified by the criteria statistic. However, the study concludes that the optimal lag duration for this investigation is 2.

Table 3: Optimal Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-417.5438	NA	63.43326	21.17719	21.43052*	21.26879
1	-369.1638	79.82702	34.90973	20.55819	22.33151	21.19937*
2	-322.9103	62.44214*	23.68836*	20.04552*	23.33883	21.23627

4.2.4 ARDL-Bound Test Approach to Co-integration

The examination of the long-term relationship between the inflation and household income in

Nigeria is made possible by the stationarity test. The ARDL bound test, which is shown in the table below, determines the long-term relationship between the variables.

Table 4: ARDL Bounds Test Result for Levels Relationship

			Critical Value Bounds		
Test Statistic	Value	K	Significance	I0 Bound	I1 Bound
F-statistic	85.69804	5	0.05	2.39	3.38

Source: Researcher's computation using EVIEWS 12

From the table above, the results show that the F-statistics value of 85.69804 is greater than the lower and upper bound respectively at 5% level of significance (2.39 and 3.38). Thus, we accept the null

hypothesis of no co-integration and conclude that long-run relationship does not exist between the dependent and the independent variables. Hence the Error Correction Model is estimated in table 5.

Table 5: Error Correction Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
PCIGR(-1)	-0.005948	0.049078	-0.121204	0.9045
INT	-0.002238	0.004905	-0.456209	0.6520
INT(-1)	-0.010780	0.005630	-1.914777	0.0666
INT(-2)	0.021047	0.004216	4.992508	0.0000
INF	0.005290	0.001071	4.940071	0.0000
INF(-1)	0.001156	0.000971	1.191206	0.2443
GCGR	-0.061094	0.088053	-0.693839	0.4939
EXGR	-0.016889	0.020561	-0.821445	0.4189
EXGR(-1)	0.019999	0.021675	0.922667	0.3647
EXGR(-2)	0.090588	0.027231	3.326697	0.0026
HCE	-0.000296	0.000981	-0.301580	0.7654
HCE(-1)	0.001057	0.000850	1.243226	0.2249
HCE(-2)	0.002936	0.000873	3.363892	0.0024
C	-0.113918	0.050960	-2.235434	0.0342
CointEq(-1)	-1.005948	0.037021	-27.17207	0.0000
R-squared	0.856468	Mean dependent var		0.172433
Adjusted R-squared	0.784702	S.D. dependent var		0.143819
S.E. of regression	0.066733	Akaike info criterion		-2.307029
Sum squared resid	0.115784	Schwarz criterion		-1.715921
Log likelihood	60.14058	Hannan-Quinn criter.		-2.093303
F-statistic	11.93416	Durbin-Watson stat		1.830053
Prob(F-statistic)	0.000000			

The regression line shows the results of inflation and household income proxies as per capita income for this study. In the context of the variables of interest, the ARDL result reveals that the first period lagged per capita income growth rate, PCIGR(-1) values of per capita income has a negative and insignificant effect on its current value (PCIGR_t). This implies that a one-period lag value of per capita income decreases the current level of per capita income by 0.005%.

Interest rate shows a negative and statistically insignificant relationship with per capita income in Nigeria. This implies that an increase/decrease in

interest rate in Nigeria will decrease/increase per capita income by 0.002% in the short run. This conforms to the apriori expectation of this study. Also, the first period lagged of the interest rate have a negative and statistically insignificant in explaining changes in per capita income, while the second period lagged of interest rate is positive and as well statistically significant in explaining changes in per capita income in Nigeria.

Inflation rate coefficient value was found to be 0.0052%, which implies that there is a positive relationship between inflation rate and per capita

income in Nigeria. The result shows that inflation rate is statistically insignificant in explaining changes in per capita income in Nigeria. It implies that a percent increase in inflation, on average, increases per capita income by 0.005% in the short-run. This conforms to economic theory. Moreover, the first period lag of inflation indicate positive/insignificant relationship with per capita income within the period of study.

Gross fixed capita formation coefficient value was found to be -0.0610 which implies that there is an inverse/insignificant between gross fixed capita formation and per capita income in Nigeria. It implies that a percent increase in gross fixed capita formation, on average, decrease per capita income by 0.0610% in the short-run. This as well does not conform to a priori expectation. This is because an increase an increase in per capita income of the individual tend to have a higher disposable income. The individuals may decide to save larger portion of their income rather than investing it in fixed assets. This can lead to a decrease in gross fixed capita formation. Also, Nigeria is heavily reliant on imports for machinery, equipment and technology. As per capita income increases, the demand for imported goods can increase. This can result in decrease in domestic investment in fixed asset.

Exchange rate coefficient value was found to be -0.0168%, which implies that there is an inverse and insignificant relationship between exchange rate and per capita income in Nigeria in the short-run. It implies that a percent increase in exchange rate on

average, decrease per capita by 0.0168% in the short-run. This conform to a priori expectation of this study. In addition, the one period lagged of exchange rate has a positive and insignificant relationship with per capita income in Nigeria. Whereas, the second period lag of exchange rate have a positive/significant relationship with per capital income in Nigeria.

Household Consumption Expenditure coefficient value was found to be -0.0003%, which implies that there is an inverse/insignificant relationship between human consumption and per capita income in Nigeria in the short run during the period of under study. It implies that a percent increase household consumption, on average, decrease per capita income by 0.0003% in the short-run. However, the first period lagged of household consumption expenditure in Nigeria have a positive and significant effect on per capita income in Nigeria, whereas, the second period lagged of household consumption expenditure is positive and statistically significant with per capita income in Nigeria in the short-run during the period under study.

The error correction sign (CointEq(-1)*) shows a negative sign and as well statistically significant at 0.05% level of significant. This implies that, there is evidence of a long-term relationship between the variables and suggests that, in the event of any disequilibrium, the system will correct itself from the short-run to the long-run term at a rate of 1.0059% every year which implies that the speed of adjustment is oscillatory.

Table 6: Long-Run ARDL Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INT	0.007982	0.003368	2.369474	0.0255
INF	0.006409	0.000945	6.780755	0.0000
GCFGR	-0.060733	0.087046	-0.697714	0.4915
EXRGR	0.093143	0.040684	2.289437	0.0304
HCE	0.003674	0.001700	2.161664	0.0400
C	-0.113245	0.052389	-2.161626	0.0400

$$EC = PCIGR - (0.0080*INT + 0.0064*INF - 0.0607*GCFGR + 0.0931 \\ *EXRGR + 0.0037*HCE - 0.1132)$$

The constant parameter indicates a negative and statistically significant. This implies that if all the explanatory variables in the model are held constant, per capita income will decrease by 0.1132% in Nigeria economy at the long-run. In the long run, interest rates in Nigeria have a positive impact on per capita income and are statistically significant. This suggests that if all other model variables remain constant over the long term, interest rates in Nigeria will increase per capita income by 0.0664%.

The gross fixed capital coefficient value of -0.0607 indicates that, over the long term, there is a negative and negligible relationship between gross fixed capital formation and per capital income in Nigeria. It suggests that in Nigeria, a percent increase in gross fixed capita formation raises per capita income by 0.0617% on average. Additionally, the long-term exchange rate coefficient value of 0.0931 was discovered, suggesting a positive and statistically significant relationship between Nigeria's per capita income and exchange

rate. It means that a one percent increase in exchange rates will, on average, result in a long-term increase in per capita income of 0.0931 percent. In conclusion, the coefficient parameter value for household consumption expenditure is 0.0036%, suggesting that a rise in household consumption expenditure will also result in an increase in per capita income in Nigeria.

Causality Test

Regression analysis examines the connection between two variables, although it does not always imply a cause-and-effect relationship. In other words, the presence of a link between variables does not imply causality or indicate the direction of impact (Gujarati, 2002). The Granger causality test, utilised in this study's causality analysis, aims to ascertain the presence and direction of a causal link between inflation and family income in Nigeria.

Table 7: Granger Causality Test

Null Hypothesis	Obs	F-Statistic	Prob.
INF does not Granger Cause PCIGR	40	6.95104	0.0029
PCIGR does not Granger Cause INF		0.82423	0.4469
HCE does not Granger Cause PCIGR	40	0.28425	0.7543
PCIGR does not Granger Cause HCE		2.06584	0.1419
HCE does not Granger Cause INF	40	0.40682	0.6689
INF does not Granger Cause HCE		0.01559	0.9845

Using a 0.05 percent significance level, the outcome of our Pair-wise Granger causality test above indicates a unidirectional causal relationship

between household income and inflation in Nigeria. This suggests that the Nigerian per capita income gap is a contributing factor to inflation.

Furthermore, household consumption spending and per capita incomes in Nigeria do not correlate in any direction.

4.2 Econometric Criterion

These tests are based on econometric theory and aim to determine whether econometric assumptions are met. Analyzes performed include normality test, heteroskedasticity test and autocorrelation test.

Normality Test

The Jarque-Bera Statistics is used to test for normality in the model. The Jarque-Bera Statistics shows if the residual violates the normality assumption. The null hypothesis (H_0 : the presence of normality) and the alternative hypothesis (the absence of normality).

Figure 1: Residual Normality chart

The decision rule is to reject the null hypothesis if the histogram is bell-shaped and the Jarque-Bera probability is below 0.05 critical value. Figure 1 shows that the residual is normally distributed as the probability value for the Jarque-Bera is greater than 0.05 critical value.

Serial Correlation Test

This study uses the Breusch-Godfrey LM test to test for serial correlation. Null (H_0 : no serial correlation) and alternative (H_1 : presence of serial correlation) hypotheses. The decision rule is to accept the null hypothesis if the p-value is greater than 0.05% or to reject it if the p-value is less than the 0.05% critical value.

Table 8: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.111547	Prob. F(2,24)	0.8949
Obs*R-squared	0.368400	Prob. Chi-Square(2)	0.8318

Source: Author's Computation

Table 8 shows the results of the serial correlation test. The F-statistic and chi-square probability values are greater than the 0.05% critical values. Thus, the null hypothesis was rejected and it was concluded that the error terms are not correlated.

Heteroskedasticity Test

This study uses the Breusch-Pagan-Godfrey test to test for heteroskedasticity. Null (H_0 : no constant variance - homoscedastic) and alternative (H_1 : constant variance - heteroscedastic) hypothesis. The decision rule is to accept the null hypothesis if the p-value is greater than 0.05% or to reject it if the p-value is less than the 0.05% critical value.

Table 9: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.487562	Prob. F(13,26)	0.9121
Obs*R-squared	7.840001	Prob. Chi-Square(13)	0.8539
Scaled explained SS	3.290504	Prob. Chi-Square(13)	0.9967

Source: Author's Computation

Table 9 represent the Heteroskedasticity test result and it shows that Probability F-statistics is greater than 0.05% critical value. As a result, we fail to reject the null hypothesis and accept that our model is homoscedastic, which implies that, the variance of the standard error are constant.

4.3 Discussion of Findings

Based on empirical findings, inflation has a negligible and statistically insignificant impact on household income in the near term, but it has a positive and statistically significant effect in the long term. In the near term, an increase in the inflation rate often results in a corresponding rise in the prices of goods and services. Consequently, households are need to allocate additional funds in order to sustain their current level of life. Nevertheless, the escalation in prices may not result in an instant corresponding increase in household income. Consequently, the buying power of households diminishes, leading to a fall in their actual income. Over time, as the economy adapts to inflationary pressures, family incomes generally increase. This occurs when wages and incomes adapt to mirror the increased cost of living resulting from inflation. As prices escalate, firms may opt to raise their pricing and subsequently increase pay in order to match the mounting expenses. Consequently, over time, family income aligns with the rising expenses of goods and services, resulting in a positive correlation between inflation and household income in the long term.

Moreover, long-term household consumption spending has a beneficial effect on household income, whereas short-term household consumption expenditure has a detrimental effect on household income in Nigeria. This occurs because, in the

immediate term, when family income declines, households often reduce their consumption spending as a result of having less disposable cash to allocate towards purchasing goods and services. In the short-run, household consumption spending and income have a negative correlation. Over time, when family income rises, households often increase their spending. This is due to their higher level of disposable income, which allows them to allocate more funds towards purchasing products and services. In the long term, there is a direct correlation between household consumption spending and income, leading to a positive association. The link can be better comprehended by considering the idea of the marginal propensity to consume (MPC). The MPC denotes the fraction of any supplementary income that households opt to allocate towards spending. During the immediate period, if there is a reduction in income, the marginal propensity to consume (MPC) may be quite small, indicating that families are more inclined to save a larger portion of their income and lower their spending. In contrast, over an extended period of time, as income rises, the marginal propensity to consume (MPC) may also grow, suggesting that families allocate a greater part of their income towards consuming.

Additionally, it is worth noting that the interest rate has a favourable impact on household income in the long term, but a negative one in the short term. This might be attributed to the phenomenon that, in the immediate term, when interest rates rise, the expenses associated with borrowing for households also rise. Consequently, households are obligated to pay elevated interest rates on their loans, resulting in a decrease in their disposable income that may be used for consumption and investment purposes. In the near term, there exists an inverse correlation

between interest rates and family income. On the other hand, over time, when interest rates go down, the expenses associated with borrowing for consumers also go down. This can result in heightened household borrowing and investment, so fostering economic expansion and augmenting household income. Reduced interest rates also enhance the affordability of financing significant expenses like homes and vehicles, hence potentially increasing household spending and income. In the long term, there is a direct correlation between interest rates and household income, leading to a positive association.

The link between gross capital creation and household income is negative/insignificant in both the short-run and long-run. When there is a rise in gross capital formation, it is assumed that economic activity and employment would also grow. However, this can also lead to an increase in production costs owing to the depreciation of the currency rate. This might result in a reduction in household income as a consequence of elevated prices and diminished demand for products and services. Over time, the accumulation of physical assets can result in enhancements in efficiency, hence boosting the earnings of households. Nevertheless, if the investments made in gross capital formation are inefficient or ineffective, it might result in a decline in family income. Moreover, if the investments in gross capital creation are done by sacrificing household income, this might result in an adverse correlation between gross capital formation and household income in Nigeria.

5.0 CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the empirical findings, it was determined that inflation had a positive and considerable impact on household income in Nigeria, both in the short-term and long-term. The study demonstrates a clear association between the increase in inflation and the decline in household income levels. Nigeria's inflation rate is comparatively elevated in relation to other nations in the area. This places a burden on households, since the ability of their income to buy

goods and services decreases. Furthermore, it suggests that certain elements, like governmental policies, variations in currency rates, and interruptions in the supply chain, have a role in the rise of inflation in Nigeria. These elements need to be considered in order to reduce the adverse effects on household income. Lower-income families are shown to be more susceptible to the impacts of inflation. This indicates the necessity of implementing focused strategies to safeguard and assist vulnerable households during times of significant inflation.

Recommendations

Based on the findings and the conclusions drawn from the study, the following recommendations are proposed:

1. The government should implement measures to control inflation rates in Nigeria. This may include monetary policy interventions, fiscal discipline, and price stability initiatives. In addition, the central bank should focus on maintaining a stable exchange rate, as currency fluctuations contribute to inflation. This stability will help protect household income and reduce the impact of inflation.
2. There is a need for improved data collection and analysis on household income and inflation. This will enable policymakers to make more informed decisions and develop targeted policies to mitigate the effect of inflation on households.
3. Social safety net programs should be strengthened to provide support to vulnerable households during periods of high inflation. This may include cash transfer programs, food subsidies, and access to affordable healthcare. Also, financial literacy programs should be promoted to educate households on managing their finances during inflationary periods. This can empower households to make informed decisions and protect their income.

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