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EMPIRICAL ANALYSIS OF THE IMPACT OF INFLATION ON HOUSEHOLD CONSUMPTION EXPENDITURE IN NIGERIA

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ABSTRACT

Despite government's monetary policies, high inflation continues to pose a negative impact on household well-being in Nigeria. Consequently, this study examines the impact of inflation on household consumption expenditure in Nigeria from1981to 2020 using the Autoregressive Distributed Lag Model (ARDL).The findings of this study revealed that, inflation and population growth have a negative and significant effect on household consumption expenditure. The results also demonstrate that household consumption expenditure is positively and significantly impacted by personal income and interest rates. The study recommends that government should step up efforts to rein in Nigeria's high rate of inflation in order to boost household consumption expenditures and preserve price stability in the nation. Furthermore, government should strengthen the economy in order to raise personal income so as to improve on a household consumption spending, government should also harness and increase productivity among the populace, particularly among those in the working age.

1.0 Introduction

Household consumption expenditure is a good indicator of a household's well-being and naturally plays a major role in shaping the social and economic policies of any nation. In a similar vein, it represents the greatest proportion of GDP in almost all economies worldwide (NBS, 2020). For instance, Asia and Europe had an average household consumption of 25.78% and 29.90% respectively, while North and South America had an average household consumption expenditure of 39.77%. Comparatively, Sub-Saharan Africa (SSA) has the lowest consumption, at 2.42%, according to the average aggregate household consumption expenditure from 2008 to 2018. Therefore, depending on a household's status or location, consumption expenditures can take many forms. As a result, households in developing countries spend more on food than non-food items, while in the majority of developed countries; consumption is skewed toward non-food items (Toyin & Adewale, 2020). Thus, this study is aimed examining the effect of price changes on both, food and non-food expenditures of households in Nigeria.

Furthermore, according to Signe (2018), household consumption in Africa has been rising faster than GDP in recent years, making it one of the world's fastest-growing consumer markets. It is reported that consumer spending in Africa is predicted to reach $21 trillion by 2025 after growing at a compound annual rate of 31.9% from 2010 to 2015. In 2015, it was valued at $144 trillion (Iheonu & Nwachukwu, 2020). In addition, low-income consumers, who account for 95% of the population in Africa, account for

71% of all consumers' spending (WBCSD, 2008). Hence, the lower consumption groups actually spend more money than the middle and higher consumption groups put together. For instance, food and drink account for $2.31 trillion of their annual spending (World Bank Group, 2021). This implies that cutting back on food spending is frequently the first thing a household does when faced with significant negative price or income shocks (Adekunle et al, 2020). This demonstrates that a society's expenditure on food decreases as it grows more developed and vice versa.

Additionally, Nigeria's total household consumption expenditure for both food and non-food items in 2019 was estimated at forty trillion (N40tr). Of this, 56.65% of the total amount spent by the households went toward food, with the remaining 43.35 percent going toward non-food purchases (WBCSD, 2008). In Nigeria, from 1981 to 2020, household consumption expenditure makes up the majority of total consumption expenditure and accounts for more than 65% of GDP (NBS, 2020). For this reason, research on consumption expenditure has drawn a lot of interest both historically (Keynes, 1936; Friedman, 1957) and more recently (Akekere & Yosuo, 2012; Alimi, 2015; Ezeji & Ajudua, 2015; Abdullahi & Yelwa, 2017). For this, majority of governments prioritize maintaining a higher standard of living and a constant pace of household consumption (NBS, 2010). Therefore, it is argued that investigating the relationship between consumption spending and its determinants, such as inflation is highly important to a nation's economy (Keho, 2019).

However, statistics from the World Development Indicators reveals that Nigeria's household consumption expenditure (HCE) increased positively to 38.8% in 1991 from a very low 9.8% in 1981; 60.3% in 2001 to 67.2% in 2011 and the trend reached an all-time high 76.7% in 2020. Nonetheless, there was a discernible trend of fluctuation in HCE, with values ranging from 59.8% in 2012 to 74.0% in 2013, 72.9 % in 2014 to 81.5% in 2016, 73.5 % and 76.7 % in 2019 and 2020, respectively (WDI, 2020). Beneath these shaky HCEs was the inflation phenomenon, which weakened household consumers' ability and, consequently, aggregate demand. Therefore, rising prices, or inflation, have an impact on household consumption expenditure (Sekhampu, 2014). As a result, understanding inflation and how it affects consumer spending is crucial to the expansion of any economy as well as the preservation of household standards of living. Therefore, policymakers should be concerned if there is a sustained increase in the rate of inflation despite an improvement in real GDP, as inflation frequently reduces the level of economic stability (Manasseh et al, 2018).

Despite monetary policies adopted by the authorities to reduce high inflation in Nigeria, its rate is still high with the standard of living of the citizens decreasing continuously. For example, in 1981, the inflation rate in Nigeria was 20.8% but it rose to 54.5% in 1991, thus making the cost of living higher. Besides, the CBN policy target of 9.3% inflation in 2001 was not achieved as it remained at 18.9% (Bosede, 2012). By 2011 the inflation rate dropped but still at double digits at10.8% and was higher in 2020 at 13.3%. In addition, there were conflicting results among the empirical literature reviewed; while some of the studies found negative relationship (Ezijie et al., 2015; Scott et al., 2020). Others reported positive association in examining the impact of inflation on household consumption expenditure (Nyamekye et al, 2017; Manesseh et al, 2018; Osuji, 2020) in Nigeria overtime.

Therefore, against this background the study is encouraged by the above-mentioned developments and attempts to reconsider the impact of inflation on household consumption expenditure in Nigeria. The remaining part of the paper is organized as follows: the second section dealt with the review of the conceptual and empirical literature. The third section is on the data,

description of variables and econometric methodology used. The fourth part discusses the results and lastly fifths section summarizes the findings, concludes and offers policy recommendations.

2.0 Literature Review

2.1 Conceptual Literature Review

2.1.1 Concept of Household Consumption Expenditure

Household consumption expenditure is defined as the value of consumers' goods and services that were acquired (used or paid for) by household for the direct satisfaction of the needs and wants of its members through direct monetary purchases in the market, as distinct from production within the households. Household also incur expenditure that do not result in the acquisition of any goods and services for the direct satisfaction of its own needs such as compulsory and quasi-compulsory transfers made to government, non-profit institutions and other households. These are referred to as the non-consumption expenditure of households (Hone et al., 2019).

2.1.2 Concept of Inflation

There were arguments among the economists as to whether inflation is a monetary phenomenon or not. From whatever angle it is viewed, inflation is a continuous rise in prices of goods and services. For instance, Johnson (1989) defines inflation "as a sustained rise in prices". According to Brooman (1964) inflation is a continuing increase in the general price level. Shapiro (1996) defines inflation in a similar vein as a persistent and appreciable rise in the general level of prices (Mordi et al., 2007).

2.2 Review of Empirical Studies

The theoretical foundation for this investigation is provided by the absolute income hypothesis developed by Keynes (1936). This is due to the theory's affirmation that income is the only factor influencing consumption. In other words, rising income levels are a precondition for rising consumption. This, according to Keynes (1936) is referred to as psychological law of consumption. Furthermore, the disposable income is impacted by the rate of inflation. In addition, all the factors mentioned by Keynes point to the current level of income as the key determinant of consumption of both an individual and the society. Therefore, this theory is important in the Nigerian context in understanding the relationship between consumption, income and inflation.

From the empirical literatures reviewed within and outside the country (Nigeria), there are mixed findings that necessitate further investigation on the relationship between inflation and household consumption expenditure. For instance, Nyamekye & Poku studied the impact of inflation on consumer spending patterns in Ghana from 1964 to 2013, (2017) using OLS, VECM, and Johansen co-integration. The findings revealed that Inflation and consumer spending have a stable, significant long-term relationship, according to the Johansen test, and the results of the OLS and VECM further support this relationship. Arapova (2018) used panel data from Asian countries from 1991 to 2015 to investigate the factors influencing household final consumption expenditure in Russia. The analysis validated each and every variable's statistical significance. Additionally, the results showed that, albeit to varying degrees, HFCE rises in all countries as GNI grows. Further research reveals that a 1% increase in GNI stimulates HFCE by 0.82% on average for the 110 countries in the group, but only by 0.49% for the Asian countries. Empirical studies by Nyamekye et al (2017), Aslam (2017), and Arapova (2018), however, employed subpar methodology. For example, the Johansen and Julius Co-integration technique was used, despite its lack of ability to accommodate variables that are only I(1). However, the authors also made use of OLS, which can produce spurious regression if certain conditions are not satisfied.

In addition, Francois & Mjeso (2018) used quarterly data from 1995 to 2015 (1Q 1995 to 4Q 2015) to analyze the South African HCE and its determinants using the ARDL technique. The long-term outcome demonstrates that South African households spend a significant amount of their real income, and that real consumption rises in tandem with the growth of the national currency (rabd). While the real exchange rate had a statistically negligible impact on HCE, price level and interest rate were found to have a negative impact on real consumption expenditure in South Africa. Moreover, in order to evaluate the factors influencing regional household final consumption expenditure in Indonesia, Surgiator and Wobiwo (2020) started a study from 2010 to 2019; thirty-three (33) Indonesian provinces were included in the study. The relationship between household final consumption expenditure (HFCE) and inflation (INF) was examined using a dynamic panel data regression model and the FD-GMM approach. The outcome shows that, while inflation and unemployment rates had a major negative impact on HFCE, the lagged real HFCE, RGDP, and GE had a significant positive impact on real HFCE.

Nathan (2012) examined the effects of fiscal policies on consumer spending in Nigeria using time series data spanning from 1970 to 2010 and employed the OLS and Johansen Co-integration techniques for analysis. According to the empirical results, the study's other variables were statistically insignificant, with inflation and interest rates being the two main factors influencing consumer spending in Nigeria. Conversely, Eziji et al. (2015) evaluated the factors influencing total consumption expenditure by applying Johansen co-integration to a time series of data covering the years 1986 to 2012. In this study, the results verified that income and consumption expenditure have a substantial and positive relationship. Furthermore, inflation and exchange rates negatively correlated with Nigerian consumption expenditure.

Moreover, Alimi (2015), estimated the consumption function under the permanent income hypothesis between South Africa and Nigeria from 1980 to 2013 using Cagan's adaptive expectation method. The outcome validated a long-term correlation between income and consumption for both nations. The result also demonstrated how Nigerian consumers behave, looking ahead because their decisions are based on anticipated future income, whereas in South Africa, past consumption influences present consumption. Additionally, in Nigeria, Abdullahi et al., (2017) examined the impact of corruption on household consumption spending between 1980 and 2015. According to the ordinary least square (OLS) results, population, GDP, and investment have a negative impact on HCE in Nigeria, while corruption has a positive impact on HCE. Conversely, Yusuf et al., (2017) used an ARDL technique to examine the relationship between interest rates and private consumption in Nigeria between 1981 and 2014. Interest rates, per capita income, money supply, private consumption expenditures, and bank loans to the private sector are the variables that are taken into consideration. With the exception of the real interest rate, which has a negative impact on consumption expenditure, the empirical results indicated a significant positive relationship between all the control variables.

Ayeni et al., (2017) used an ARDL technique to study the econometric modelling of the relationship between income and consumption in Nigeria between 1980 and 2014. The study variables are per capita income and personal consumption expenditure. The empirical results showed that disposable income had a short-term positive impact on consumption expenditure and that, because of poverty, unemployment, and low living standards, changes in income do not permanently alter consumption habits. The permanent income hypothesis, which states that consumers save more money than they spend, was tested over the long term, and the results

revealed a positive and significant relationship between the two variables. Also, Ikwuagwu et al, (2017) evaluated the factors influencing total consumption expenditure in Nigeria from 1981 to 2015 using the ARDL technique and Granger causality. The empirical results demonstrated a positive and significant relationship between GDP, interest rates and aggregate consumption expenditure, while the Granger causality analysis demonstrated a unidirectional relationship between inflation rate and aggregate consumption expenditure.

Additionally, Manasseh et al., (2018) used Granger causality and a modified consumer spending model to ascertain how interest and inflation rates affect Nigerian consumption expenditure between 1981 and 2011. The empirical results showed a positive and statistical relationship between inflation, interest rates and consumption expenditure. Moreover, results of the Granger causality test showed that inflation and interest rates are not caused by private consumption expenditure. Conversely, Effiong & Kehinde (2020) examined the relationship between government spending and private consumption in Nigeria between 1981 and 2018 using the ARDL technique of analysis. In contrast to the insignificant relationship between capital expenditure and private consumption, the long-term results indicated a significant relationship between recurrent expenditure and private consumption. In addition, the empirical result showed a strong positive correlation between GDP and PCE over the long and short terms. Additionally, the short-term outcome showed a weak but positive correlation between Nigeria's capital and recurring expenditures. Moreover, Osuji (2020) investigated, using OLS, how inflation affected Nigerian households' final consumption expenditures from 1981 to 2018. The growth rate of household consumption expenditure, GDP, interest rate, and the CPI—a proxy for inflation—were some of the variables examined in the study. The empirical results demonstrated that household consumption expenditure in Nigeria and inflation has a positive and statistically significant relationship.

Arising from the above literature reviewed there exist a gap that needs to be filled in terms of the variables used in the previous studies. That is, only the study of Abdullahi et al (2017) incorporated the variable (population growth) in their model despite its significant effect on HCE in Nigeria. According to NBS (2020), a growing population leads to an increase in the demand for basic necessities like food, shelter and closing, thereby increasing consumption expenditure of a household. Again, larger population puts pressure on limited resources, leading to higher prices and inflation, which in turn affects consumption patterns and expenditure of Nigerian households. Thus, this study is intended to incorporate the population growth in the model in order to determine the impact of inflation on household consumption expenditure in Nigeria.

3.0 Methodology

This section provides the methodology used in this research. It involves model specification, Source, definition and measurement of data, and estimation techniques.

3.1 Model Specification

The absolute income hypothesis provides the theoretical framework for this study. This is because, the theory affirms that consumption is solely determined by income. That is, increase in consumption is associated with the increase in income. Thus, the functional form of the relationship between consumption and income according to the theory is presented in equation (1):

$$C = f(Y) \quad (1)$$

Even though, there is no single theory that links inflation and household consumption expenditure directly. But, attempts have been made by scholars to explore the relationship between the variables (i.e.

inflation and household consumption expenditure). For instance, Keho (2019) revealed that inflation rate negatively affects aggregate consumption. Also, Abdullahi & Yelwa (2017) opined that inflation is a threat to economic growth and development as it reduces the level of household consumption expenditure. In addition, the level of inflation has significant influence on consumption as it lowers the disposable income of households. That is why; inflation lowers the purchasing power of households (Sekhampu, 2014).

However, the equation (1) above could be augmented to include the variable of interest (inflation) of this study, since it is believed that inflation influences a disposable income of households which is also a determining factor of consumption expenditure. Therefore;

$$C = f(Y, I) \quad (2)$$

Where, *C* is the consumption expenditure; *f* is the functional form of the model; *Y* is income and *I* is the inflation rate. Thus, in line with the theoretical framework of this study, a functional form of the model is presented in equation (3). This, has allowed for the inclusion of the control variables apart from the dependent and independent variables.

$$HCE = f(INF, INTR, POP, PI) \quad (3)$$

Therefore, the functional form of the model (3) is transformed in to an econometric model as specified in equation (4):

$$HCE_t = \beta 0 + \beta_1 INF_t + \beta_2 INT_t + PI_3 + \beta_4 POP_t + \varepsilon_t \quad (4)$$

Where:

HCE = Household consumption expenditure
INF = Inflation rate
INTR = Interest Rate
PI = Personal Income
POP = Population
β_1, β_2, β_3 and β_4= Coefficients
β_0 = Intercept
ε_t = Random Error Term

The variables selected in this model were as a result of their effect on household consumption expenditure. For example, interest rate tends to reduce aggregate consumption because of the wealth declines associated with the heavier discounting of future income. Also, an increase in interest rates gives rise to rising inflation rate, thus making it difficult for consumers to repay their debts (Bayar & McMorrow, 1999). However, the inclusion of personal income among the control variables was that, average income of household determines their consumption expenditure. More so, population size affects household consumption expenditure because every economy is faced with limited available resources.

3.2 Definition and Measurement of Variables

Household consumption expenditure (**HCE**): is defined as the market value of all goods and services, including durable products (such as cars, electronics, furniture, etc), purchased by households. It excludes purchases of dwellings but includes imputed rent for owner-occupied dwellings. The data is measured in constant local currency (WDI, 2020).

Inflation (INF): is defined as a persistent and appreciable rise in the general level of prices. It is measured by the annual growth rate of the GDP implicit deflator that shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency (WDI, 2020).

Interest rate (**INTR):** is a proxy of the lending rate, which is the bank rate that usually meets the short- and medium-term financing needs of the private sector. This rate is normally measured according to creditworthiness of borrowers and objectives of financing. The terms and

conditions attached to these rates differ by country. (WDI, 2020).

Population (POP): is the total working age population which is 15 to 64 years as a percentage of the total population which counts all residents regardless of legal status or citizenship (WDI, 2020).

Personal Income (PI): is a proxy of GDP per capita which refers to all income collectively received by all individuals or households in a country. It includes compensation from a number of sources, such as salaries, wages and bonuses received from employment, self-employment, dividends and distributions received from investment (WDI, 2020). It is measured in constant local currency.

3.3 Estimation Technique

The bounds testing approach to co-integration based on Autoregressive Distributed Lag (ARDL) model framework, as proposed by Pesaran, Shin, and Smith (2001) was adopted by this study in order to examine the relationship between inflation and household consumption expenditure in Nigeria. This is due to its important features over other co-integration approaches such as that of Engel and Granger (1987) and Johansen and Juselius (1990). Also, the ARDL does not impose restriction on the integration order of the variables being all I(1). Consequently, the ARDL can be applied if one or some of the variables are I(0) and others are I(1) (Abubakar and Kassim, 2016). The ARDL is presented in equation (1) as:

$$LHCE_t = \alpha_0 + \alpha_1 LHCE_{t-1} + \alpha_2 INF_{t-1} + \alpha_3 LPI_{t-1} + \alpha_4 INTR_{t-1} + \alpha_5 POP_{t-1} + \sum_{t=1}^{p} \beta_1 \Delta LHCE_{t-1} + \sum_{t=0}^{q} \beta_2 \Delta INF_{t-1} + \sum_{t=0}^{r} \beta_3 \Delta LPI_{t-1} + \sum_{t=0}^{s} \beta_4 \Delta INTR_{t-1} + \sum_{t=0}^{t} \beta_5 \Delta POP_{t-1} + \mu_t \quad (5)$$

Where p, q, r, and s are the optimal lag lengths, L is the natural logarithm, and w µt is the error term. HCE is the dependent variable, INF is the core variable and POP, INTR, and PI stand for other control variables. Also, because INTR, POP, and INF are already in rates, only HCE and PI were logged.

Following the estimation of long run relationship between the variables, the study further estimated the error correction model (ECM) so as to capture the short run coefficients. The ARDL model of the ECM is specified as follows:

$$\Delta LHCE_{t-1} = \alpha_0 + \sum_{t=1}^{p} \beta_1 \Delta LHCE_{t-1} + \sum_{t=0}^{q} \beta_2 \Delta INF_{t-1} + \sum_{t=0}^{r} \beta_3 \Delta LPI_{t-1} + \sum_{t=0}^{s} \beta_4 \Delta INTR_{t-1} + \sum_{t=0}^{t} \beta_5 \Delta POP_{t-1} + \delta ECT_{t-1} + \mu_t \quad (6)$$

The ECT is the error correction term. Although it does not indicate which way the causality is going, co-integration suggests that there is one. According to Engle and Granger (1987), a dynamic error correction framework is the only way to examine a causality relationship if co-integration between the variables is confirmed. The lag term's specific coefficients capture the short-run causality, while the error correction term provides information about the long-run causality between the variables. According to Adebola et al., (2011), long-term causality is suggested by a negative and statistically

significant error correction term, whereas significant coefficients of each lag dependent variable indicate short-term causation.

4.0 Results and Discussion

4.1 Results of Unit Root Tests

The results of the Augmented Dicker-Fuller (ADF) and Philips-Perron (PP) statistics are presented in Table 4.1.

Table 1: Results of ADF and PP Unit Root Tests

	ADF		PP	
Variables	**Level**	**First Difference**	**Level**	**First Difference**
LHCE	-0.390	-6.988***	-0.169	-7.519***
INF	-13.282***		-10.289***	
POP	-2.537	-3.351***	-1.112	-3.009***
INTR	-2.547	-5.494***	-2.523	-6.999***
LPI	-1.385	-3.084***	-1.102	-3.084***

Source: Researcher's computation. *** indicate statistical significance at 1%.

Table 4.1 shows that only inflation (INF) is stationary at level (i.e. I(0)) whereas log of household consumption expenditure (LHCE), population (POP), log of personal income (LPI) and INTR are stationary after conducting the first difference test I(I). This signifies the mixture of the series, that is I(0) and I(I). The mixed order of integration of the variables provides a strong justification for the use of ARDL method in this study. After ascertaining the stationary status of the variables, the ARDL bounds testing approach to co- integration was conducted.

4.2 Results of ARDL Co-integration Test

The bounds testing method is then used to perform the cointegration test. Table 4.2 below shows the outcomes of the cointegration test for the model incorporating household consumption expenditure and additional control variables:

Table 2: Results of ARDL Co-integration Test

Dependent Variable	Function	F-Statistics
LHCE	F (INF, POP, INTR, LPI)	6.710***
Critical Value Bounds		

10%		5%		2.5%		1%	
I(0)	I(I)	I(0)	I(I)	I(0)	I(I)	I(0)	I(I)
2.427	3.395	2.893	4.000	-	-	3.967	5.455

Source: researcher's computation. *** and ** indicate statistical significance at 1% and 5% respectively

Table 3 shows that the variables have a long-term relationship. Thus, estimating the relationship between the variables is the next step, as there is a long-term relationship between them.

4.3 Results of the Estimated Long Run Coefficients

Using the Akaike Information Criterion (AIC) to estimate the relationship between the variables, this study determined the ideal lag-lengths (3,2,2,2,0). The long-run effects of inflation on the HCE model are shown in Table 3.

Table 3: Result of Long run Model

Regressors	Coefficient	Std.Error	t-Statistics	Prob.
INF	-0.016**	0.007	-2.285	0.032
LPI	0.285***	0.032	9.041	0.000
INTR	0.064**	0.031	2.101	0.047
POP	-0.283***	0.097	-2.903	0.008
C	41.686***	4.895	8.515	0.000
R^2 = 0.982				
F-Stat=101.333				

Source: researcher's computation. *** and ** indicate statistical significance at 1% and 5% respectively.

The findings show that, over the long run, household consumption expenditure is negatively and significantly impacted by the inflation rate (INF) at the 5% significance level. This indicates that, over time, a 1% increase in the inflation rate results in a 2% drop in household consumption expenditures. This finding is in consonance with a priori expectation. This means that inflation rate leads to a decrease in household consumption expenditure in Nigeria. Moreover, the finding of this study equally confirmed the findings of previous researchers (Ezeji et al, 2015; Scott et al, 2020). The outcome of this study also contradicts the findings of Manasseh et al (2018) and Osuji (2020) in which the positive correlation was observed between inflation and HCE in Nigeria. Furthermore, the negative effect of inflation on consumption expenditure of households is a referred to as a threat to the economy, as it erodes the purchasing power of consumers (households) and to some extent subjecting them to untold hardship (Keho, 2019).

On the other hand, there is a positive and substantial correlation between household consumption expenditure and personal income (LPI). In Nigeria, household consumption expenditure improves by 28% for every 1% increase in personal income (LPI). This finding is in agreement with a priori expectation and also the Keynes (1936) absolute income hypothesis that considers income as the sole determinant of consumption expenditure. That is consumption increases as income increases but, not by as much as the increase in income. This emphasized that, also personal income (LPI) leads to an improvement in household consumption expenditure in Nigeria, as an increase in income brings about an increase in consumption. Accordingly, the result of this study coincides with the outcomes of previous studies (Ayeni et al, 2017 & Manasseh et al, 2018).

Conversely, interest rate (INTR) has a large and favourable effect on household consumption expenditure in Nigeria. In other words, over time, a 1% increase in interest rates causes a 6% increase in household consumption spending. This finding conforms to the previous finding of researchers (Francois et al, 2018). This finding implies that an increase in interest rate could make savings more attractive to consumers and investors, than spending because of the expected higher return that may accrue to their saved money. Thus, as the saved money increases by the increase in interest rate, household's income will increase too, thereby increasing the level of consumption expenditure (Nathan, 2012).

Furthermore, the population coefficient is statistically significant and negative, meaning that a 1% increase in population eventually results in a 28% drop in household consumption spending in Nigeria. This result concurred with a priori expectation expenditure in Nigeria in the long run. This finding confirmed the Malthusian theory of population which stressed that population negatively impacts on the limited available resources. Hence, with limited resources amidst increasing population, households find it difficult to cater for their basic consumption needs. In addition, this study's outcome is equally corresponds to the previous study of Abdullahi et al, (2017). Moreover, the F-statistics coefficient (101.333) and its probability value (0.000) show that the combined significance of the explanatory variables accounts for the variation in HCE. The calculated value of R^2 shows that the explanatory variables account for 98.2% of the total variation in HCE, with the remaining 11.8% attributed to the influence of variables not included in the regression model.

4.4 Results of Estimated Short Run Model

Since there is co-integration between the variables of interest, the study proceeds to explore the short run behaviour of the variables. The results of the short run model are presented in Table 4.4 below.

Table 4: **Results of the Estimated Short-run Model**

DV: LHCE

Variable	Coefficient	Std. Error	t-Statistics	Prob.
D(LHCE(-1))	-0.065	0.111	-0.590	0.560
D(LHCE(-2))	-0.282**	0.113	-2.484	0.020
D(INF)	-0.007***	0.001	-5.868	0.000
D(INF(-1))	0.004	0.001	3.274	0.003
D(INTR)	0.007	0.005	1.431	0.165
D(INTR(-1))	-0.031***	0.006	-4.871	0.000
D(POP)	-0.577**	0.233	-2.470	0.021
D(POP(-1))	-0.610***	0.242	-2.520	0.019
ECM (-1)	-0.627***	0.089	-7.001	0.000

Source: Researcher's computation using E-views 10 *** and ** denotes statistical significance at one 1% and 5% respectively.

The findings show a significant and unfavourable short-term correlation between household consumption spending and inflation. The amount that households spend on consumption drops by 1% for every 1% increase in inflation. In the short term, interest rate (INTR) and HCE have a negative and substantial relationship. Household consumption expenditure declines by 3% for every 1% increase in interest rates. Furthermore, in the near term, there is a substantial and negative correlation between household consumption expenditure and the population (POP) coefficient. It demonstrates that a 1% increase in population causes household consumption expenditures to drop by 58%. Additionally, the statistical significance of the coefficient of error correction term (ECT) at the 1% level is -0.62. This means that in a year, 62 percent of the equilibrium deviation would be corrected.

4.5 Results of Diagnostic Tests

Some diagnostic tests were performed to assess the estimated model's reliability. Breusch-Godfrey serial correlation LM test, Breusch-Pegan heteroscedasticity test,

Jarque-Bera normality test, and Ramsey RESET (functional form) tests were conducted as diagnostic tests in order to accomplish this task. Furthermore, tests of Cusum and CusumQ (Stability Tests) were accomplished.

able 5: Results of Post-estimation Tests

LM Test Statistic	Results
Serial Correlation: χ^2	0.512 (0.606)
Functional Form (Ramsey Test): F Stat.	0.192 (0.665)
Normality (Jarque-Bera)	1.143 (0.564)
Heteroscedasticity: χ^2	0.835 (0.622)

Source: Researcher's computation. Probability values are in parentheses

The estimated parameters of the model appear to be stable, as indicated by the Ramsey test result of 0.665. The series have a normal distribution with an insignificance probability value of 0.564, according to the Jarque-Bera statistics. This suggests that the normally distributed series null hypothesis is accepted and the alternative, according to which the series are not normally distributed, is rejected. The heteroscedasticity test results from the Breusch-Pagan-Godfrey test also revealed an insignificant p-value, which suggests that the alternative hypothesis was rejected. Consequently, we determine that the residuals are homoscedastic, or that their variance is constant, and we accepted the null hypothesis.

4.6 Results of Stability Tests

The cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ) tests were performed to determine the stability of the parameters. The parameters are deemed unstable if the CUSUMQ plots break in the lower or upper bounds. Figures 1 and 2's plots are contained within the lines. This demonstrates that all of the variables used are insensitive to structural breaks, and the model's estimated parameters remain constant throughout the study period.

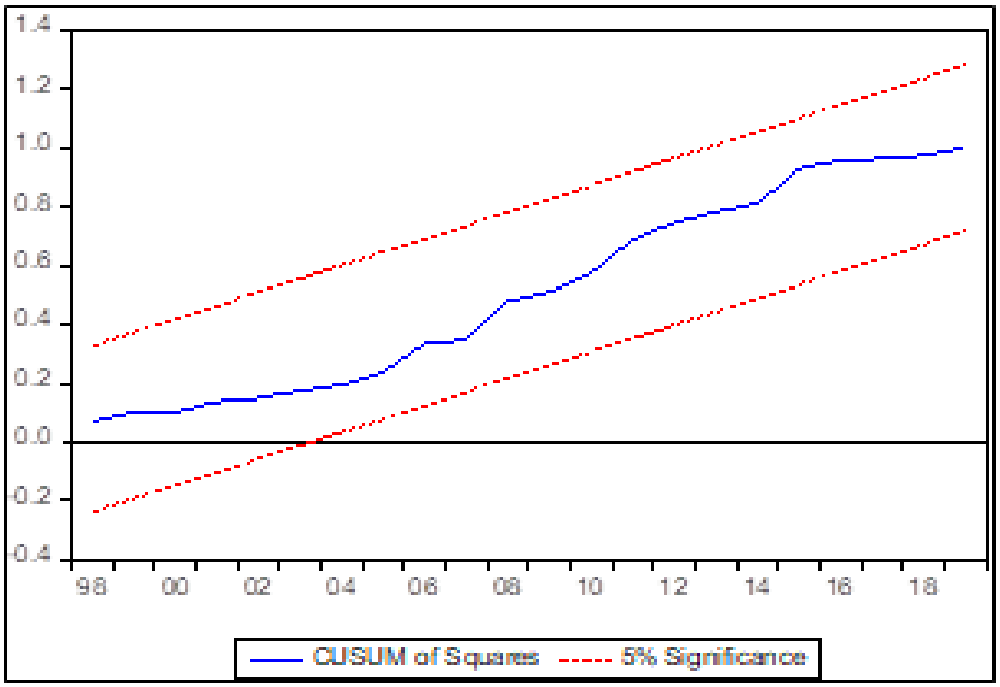

Figure 1: Cum sum of recursive residuals plots

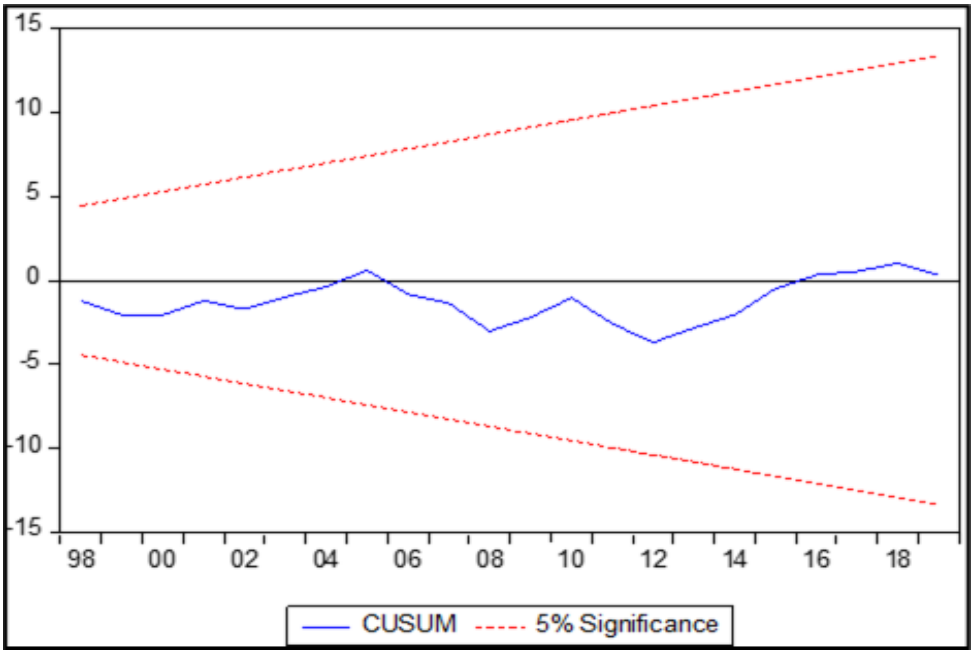

Figure 2: Cum sum of squares of recursive residuals plots

5.0 Conclusion and Policy Implications

This study examines the relationship between inflation and household consumption expenditure in Nigeria from 1981 to 2020 using the ARDL-bounds testing technique. In addition to other control variables like the interest rate, personal income, and population, the ARDL bound tests for co-integration shows that there was a long-term co-integrating relationship between inflation and household consumption expenditure. Furthermore, during the study period, there was a significant negative relationship between household consumption expenditure and inflation. However, the analysis also shows a negative and significant relationship between the two variables in the short run between household consumption expenditure and inflation. According to the error correction mechanism's rate of adjustment, 63% of the equilibrium deviations were fixed in less than a year. These results lead this study to suggest the following.

i. Government ought to strengthen the measures it has been taking to curb the country's high rate of inflation. This will help in addressing households' low consumption expenditures and enhance their well-being.
ii. Government should come up with a plan to keep the nation's prices stable. By doing this, household consumption expenditures would remain unaffected by low levels of inflation.
iii. Government should stimulate the economy to raise personal income per head. This would have a positive multiplier effect on household consumption expenditures.
iv. In order to increase household consumption expenditure, government should harness the population particularly, the working age (15–64). Consequently, household's welfare will improve significantly.

In addition to the above, future studies should focus on other variables such as poverty level of households, income in equality to overcome the limitation of this study.

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