

## Effect of Inflation on Household Final Consumption Expenditure in Nigeria

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### Abstract

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The study empirically examined the effect of inflation on household final consumption expenditure in Nigeria for the period of 1981 to 2018 using ordinary least square econometric method. The empirical findings of the study provide evidence that there exist a positive significant long run relationship between inflation and household consumption expenditure in Nigeria. The study therefore recommended that for government to reduce the adverse effect of inflation on private consumption there is the need to ensure low and stable prices at all times.

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**Keywords:** Inflation, Household, Consumption Expenditure, Economic growth.

### 1. Introduction

A growing body of theoretical and empirical studies exists which provides evidence that sustained and therefore likely predictable high rates of inflation can have adverse consequences either for an economy's long – run rate of real growth or for its long – run level of real activity (See Barro (1995), Bruno and Easterly (1998), Rousseau and Wachtel (2002)). The central point in these studies is that inflation inhibits growth and development by creating distortions and uncertainties in the economy, discouraging long term planning and also reducing savings and capital accumulation. Thus, high rates of inflation have become a major source of concern to monetary authorities and policy makers of most nations. Inflation in this instance is defined as a persistence rise in the general price level of goods and services in a country over a long period of time (Umaru & Zubairu, 2012).

Considered as an integral part of macroeconomic policy, the central bank of Nigeria (CBN) has made achieving price stability as its main monetary policy thrust. According to Umaru and Zubairu (2012), the emphasis given to price stability in the conduct of monetary policy is with a view to promoting sustainable growth and development as well as strengthening the purchasing power of the domestic currency amongst others. The central bank employs the monetary targeting strategy in the conduct of its monetary policy. This is based on the assumption of a stable and predictable relationship between money supply and inflation.

However even though a great deal of effort has been devoted empirically in examining the impact of inflation on economic growth in Nigeria, very few studies to the best of my knowledge have attempted to examine the effect of inflation on household consumption expenditure. Hence, in this present study, we attempt to fill this gap by investigating the link between Inflation and household consumption expenditure. Household consumption expenditure refers to household final consumption expenditure. It is the market value of all goods and services, including durable products (such as cars, washing machines, and home computers), purchased by households. It excludes purchases of dwellings but includes imputed rent for owner occupied dwellings. It also includes payments and fees to governments to obtain permits and licenses.

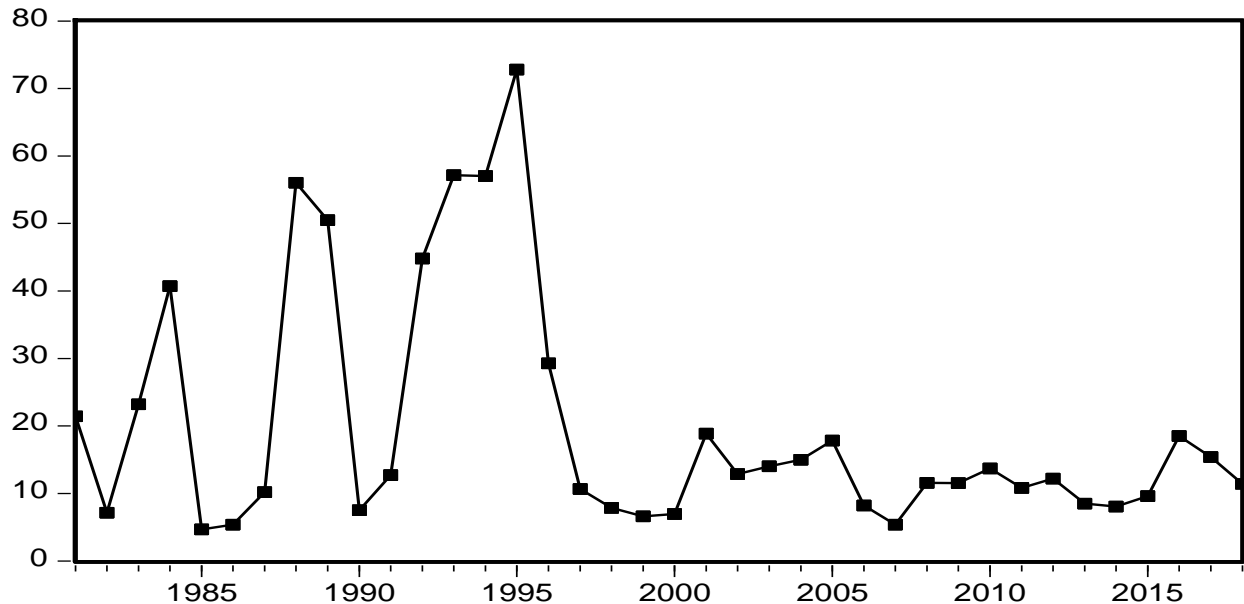
For Nigeria, studying the relationship between Inflation and Household consumption expenditure is a vital one considering the fact that Household consumption expenditure constitutes the largest component of total consumption expenditure in Nigeria and accounts for more than 65% of the Gross Domestic Product, GDP (National Bureau of Statistics, 2010). Thus, household consumption expenditure is a core component of aggregate demand and very important to the economy of any nation and that is why most government focuses on ensuring improved standard of living and a steady rate of economic growth.

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Furthermore, an overview of inflation trend in Nigeria as published in the Central bank of Nigeria (CBN) statistical bulletin 2018 showed that annual inflation rates grew from 8.04% in 2014 to about 9.02% in 2015 and doubled in 2016 by rising to 18.55% before falling to 15.4% in 2017 and a further fall to 11.4% in 2018. Prior to 2014 the inflation figures stood at 21.42%, 12.7%, 18.87% and 10.84% in 1981, 1991, 2001 and 2011 respectively with the highest rate of 72.8% recorded in 1995 and the lowest rate of 4.67% in 1985 (CBN Statistical Bulletin 2016).

**Figure 1: Trend of Inflation in Nigeria (1981-2018)**



As a result of the above it becomes imperative and appropriate to empirically examine the impact of inflation on household consumption expenditure in Nigeria. In essence the study will seek to answer the question as to whether inflation has any significant effect on household consumption expenditure in Nigeria.

Answering the above research question would help us to see whether, how and to what extent Inflation impacts on household consumption expenditure in Nigeria.

The rest of this paper is structured as follows; Section two deals with the literature review while section three describes the methodology to be used followed by a discussion of major findings and result in section four while section five concludes the study.

## 2. Literature Review

### 2.1 Theoretical literature

The theories to be reviewed here include the Keynesian theory of inflation and Modern Theory of Inflation.

#### 2.1.1. The Keynesian Theory of Inflation

Keynesian theory of inflation could be considered as an extension and generalization of Wicksells view. Keynes argued that increase in aggregate demand could be as a result of an increase in real factors. According to Keynes there is something called Inflationary gap which is the excess of planned expenditure over output available at full employment.

#### 2.1.2. Modern Theory of Inflation

The modern approach to inflation on the other hand follows the Theory of Price Determination. The price theory tells us that in a competitive market, price of a commodity is determined by the market demand and the supply of the commodity and variation in the price of the commodity is caused by the variation in the demand and supply factors. Likewise, the aggregate price level is determined by the aggregate demand and aggregate supply and variation in the aggregate price level is caused by the variations in the aggregate demand and aggregate supply. The modern theory of inflation is, in fact, a synthesis of Classical and Keynesian Theories of Inflation. The modern analysis of inflation shows that inflation is caused by both demand-side and supply-side factors.

The demand-side factors are called demand-pull factors, and supply-side factors are called supply-side or cost push factors. Accordingly, giving rise to two kinds of inflation namely: Demand-pull inflation and Cost-push inflation.

## 2.2 Empirical Literature

Over the years, several studies have been carried out to examine the impact of inflation on economic growth with only a few examining the impact on private consumption. In this section, we explore the existing literature first on a global perspective and on the Nigerian case.

### 2.2.1 Foreign Evidence

On the global front, Barro (1995) assessed the effects of inflation on economic performance of over 100 countries using data for the period 1960-1970. The regression result of the study revealed that if a number of countries characteristics are held constant, then an increase in average inflation of 10 percent per annum reduces the growth rate of real GDP by 0.2 - 0.3 percent per annum and lowers the ratio of investment to GDP by 0.4 - 0.6 percent.

Bruno and Easterly (1995) examining the determinants of economic growth proposed a nonparametric definition of high inflation crises as “periods when annual inflation is above 40%”. Using an annual data for 26 countries and having set a threshold for an inflation crisis as an inflation rate of 40 percent and over, the authors identified countries which had high inflation crisis of 40 percent and above and assessed how the country’s growth has performed before, during and after its high inflation crisis. The result of the study provided evidence of a negative relationship between inflation and growth after controlling for other factors such as shocks resulting from political crises, terms of trade and wars. Prasanna and Gopakumar (2009) examined the empirical relationship between inflation and economic growth in India using the co-integration and error correction models for the period of 1972 to 2007. The empirical result of their study showed that inflation and economic growth are negatively related. Secondly, the sensitivity of inflation to changes in growth rates is larger than that of growth to changes in inflation rates.

Using Euler equation-type of consumption functions, De Mello and Carneiro (2010) analyzed the consumption behaviour in a context of persistently high inflation. The empirical findings revealed that in the presence of persistently high inflation, widespread backward looking indexation and total foreign currency substitution via dollarization lead to consumption volatility. The study therefore concluded that, if the external shocks are to have a similar impact on high inflation countries in Latin America, we would then require that the underlying consumer spending responses to shocks should be broadly similar.

Alem and Soderbo (2010) examined Household level consumption in urban Ethiopia: the impact of food price inflation and idiosyncratic shocks using panel data. The result of their study showed that household with low levels of assets was adversely affected by food price inflation. They also found out that households headed by casual workers were more vulnerable to food price shock. Carrying out an econometric study on private consumption function in Lebanon, Wadal (2011) examined the response of consumption to income, interest rate, inflation, and wealth in Lebanon. Using real factors rather than nominal variables and a data set covering the period 1975 to 2007 the study explored the main determinants of the real private consumption in Lebanon. The result of the study indicated that in the long-run, real private consumption is affected by current disposable income, anticipated inflation and wealth.

Agalega and Acheampong (2013) examined the impact of inflation, policy rate and government consumption expenditure on GDP growth in Ghana using Co-integration approach and annual time series data spanning from 1980-2010. The result of the study showed a positive long-run relationship between inflation, policy rate and real GDP, while government consumption expenditure on the other hand had a negative impact on real GDP in the long run. The result further revealed that inflation and government consumption expenditure had a positive effect on real GDP in the short run. In conclusion, the study recommended among others that the government through the Bank of Ghana should develop and pursue prudent monetary and fiscal policies that would aim at reducing and stabilizing both the micro and macroeconomic indicators especially inflation targeting so as to boost the growth of the economy.

### 2.2.2 Nigerian Evidence

Analyzing the case of Nigeria, Nwabueze (2009) investigated the causal relationship between gross domestic product and personal consumption expenditure.

Using annual data from 1994 -2007 the study employed regression analysis to investigate the causal relationship between gross domestic product and personal consumption expenditure of Nigeria.

The result showed that increase in consumption expenditure would lead to increase in GDP however increase in GDP would not result in increase in household consumption expenditure.

Chimobi (2010) analyzed the relationship between inflation and economic growth using annual data for the period 1970 to 2005. The study found a non co-integrating relationship between the two variables. Using Granger causality tests, however, the study established unidirectional causality running from inflation to economic growth.

Odior (2011) explored the household welfare effect of macroeconomic volatility on private consumption (PCE) in Nigeria using reduced form coefficients of simultaneous equation model and data spanning from 1980 to 2008. The result showed that macroeconomic volatility does lead to a decline in consumption expenditure and also economic shade to inflation effects is stronger on the PCE at a longer horizon. The study concluded that inflation has a negative effect on welfare.

In contrast, Umaru and Zubairu (2012) contend that inflation exerts positive influence on economic growth by encouraging productivity, output level and promoting total factor productivity.

Oduh (2012) on his part explored the impact of consumers' confidence and expectation on consumption in Nigeria using panel data analysis. The study investigated the macroeconomic determinants of private consumption, laying emphasis on consumer confidence and expectation by accounting for variations across the six geopolitical zones in Nigeria. The identified macroeconomic variables in addition to consumer confidence includes: current and expected income, prices of food and durable, nominal official exchanges rate, and deposit rate. To realize the study objective, data from the CBN quarterly survey of consumer confidence and expectation spanning from 2009 to 2011 was decomposed into monthly series to improve on a number of observations. To account for variations in the zero demand patterns, fixed effect panel regression was estimated with EGLS, accounting for cross-section weight. The result obtained showed strong evidence of positive relationship between consumer confidence and household planned spending. Aside exchange rate, consumer confidence has the highest influence on consumption accounting for about 1.7% change in planned spending; while exchange rate account for 3.2%.

Osuala and Onyeike (2013) examined the impact of inflation on economic growth in Nigeria using granger causality and data set spanning from 1970 to 2011. The empirical result showed that there exists a statistically significant positive relationship between inflation and economic growth in Nigeria. However, there is no leading variable in the relationship between inflation and economic growth in Nigeria. They conclude that the effect is contemporaneous.

Shuaib et al. (2015) examined the impact of inflation rate on the economic growth in Nigeria, exploring secondary data for the period of 1960 to 2012. The empirical result of the test showed that for the period covered by the study, there was no co-integrating relationship between Inflation and economic growth for Nigeria data. Moreover, the Granger causality test showed that there was no causal relationship between inflation and economic growth.

Chude and Chude (2015) analyzed the relationship between inflation and economic growth in Nigeria from 2000 to 2009, using the OLS technique of analysis. The findings indicate that there is strong relationship between inflation and economic growth in Nigeria, and that exchange rate exerts positive impact on economic growth and that high interest rate is shown to be negatively related to growth.

### **3. Methodology**

This section comprises the theoretical framework as well as the time series econometric methods and techniques employed to carry out analysis on the impact of inflation on household consumption expenditure in Nigeria.

#### **3.1 Theoretical Framework:**

The traditional Keynesian model comprises of the aggregate demand (AD) and aggregate supply (AS) curves, which illustrates the inflation growth relationship. According to this model, in the short-run, the (AS) curve is upward sloping rather than vertical which is its critical feature. If the AS curve is vertical, changes on the demand side of the economy affect only prices.

However, if it is upward sloping, changes in AD affect prices and output, this holds with the fact that many factors derive the inflation rate and the level of output in the short-run. These include changes in expectations, labour force, prices of other factors of production, fiscal and/or monetary policy.

In moving from the short-run to the hypothetical long-run, the above mentioned factors and its shock, on the 'steady state' of the economy are assumed to be balanced out. In this 'steady state' situation, nothing is changing as the name suggests. The dynamic adjustment of the short-run AD and AS curves yields an adjustment path, which exhibits an initial positive relationship between inflation and growth, however, turns negative towards the latter part of the adjustment path.

However, the structuralists argue that inflation is crucial for economic growth while the monetarists posit that inflation is harmful to economic growth. To date, several empirical studies confirm the existence of either a positive or negative relationship between these two major macroeconomic variables even as Chude and Chude (2015) argue that low and stable inflation promotes economic growth and vice versa. In spite of all these view, there is no a specific theory that explained or shows the relationship between inflation and household consumption expenditure this gap the present study attempts to fill.

### 3.2 Model Specification

In other to estimate the impact of inflation on household consumption expenditure in Nigeria, the linear regression model based on the ordinary least square (OLS) technique would be employed. Ordinary least square (OLS) is extensively used in regression analysis primarily because it is intuitively appealing and mathematically much simpler than any other econometric technique (Gujarati, 2004). Household consumption expenditure (HCE) served as the dependent variable while consumer price index a proxy of inflation rate (INF) served as the independent variable. In order to obtain robust estimates the study included interest rate (INT) and gross domestic product growth rate (GDPG) as related control variables. The general functional form of the linear regression model is stated below:

$$HCE = f(INF, INT, GDPG) \quad (1)$$

#### Where

HCE = Household consumption expenditure growth rate

INF = Inflation rate (Measured by Consumer price Index)

INT = Interest Rate

GDPG = Gross Domestic Product Growth Rate (Economic Growth)

The econometric form of equation (1) above is represented thus:

$$HCE = b_0 + b_1 INF + b_2 INT + b_3 GDPG + e \quad (2)$$

**Where:**  $b_0$  = Intercept of relationship in the model/ constant;  $b_1 - b_3$  = Coefficients of each independent or explanatory variable;  $e$  = Stochastic Error term

### 3.3 Estimation Techniques

The investigative approach adopted by this study consists of four major steps. First the augmented Dickey-Fuller (ADF) will be used to test the stationary or non-stationary of the variable and their order of integration. Second the Engel and Granger technique is used to test for long run relationship between the variable. Thirdly if the variables are co integrated. The ECM model will be specified but if they are not long run will be inter-perfected. Finally various residual tests would be conducted on the residuals of the models to ensure compliance with linear model estimations.

#### 3.3.1 Data Source and Software

The dataset for this study is drawn from the Central Bank of Nigeria (CBN) statistical Bulletin 2018 edition. The Microsoft Excel software for windows will be used for data entering and E-views 9 will be used for the estimation.

## 4. Presentation of Results

### 4.1 Unit Root Test Result

In this study the Augmented Dickey fuller (ADF) unit root test was employed to test for the stationarity of the variable. A variable is stationary if ADF statistic is greater than the test critical value in absolute terms and at a chosen level of significance. The result is presented in the table below.

**Table 4.1: ADF Unit Root Test**

Variable	ADF stat (Level form)	5% Critical Value	Order of Integration
HCE	-5.35	-2.94	I (0)
INF	-3.05	-2.94	I (0)
INT	-2.97	-2.94	I (0)
GDPG	-3.25	-2.95	I (0)

From the table above it can be observed that all the variables are stationary in their levels and needs no differencing. At 5% critical level, the null hypothesis of non- stationary was rejected for all the series thus leading us to conclude that they are integrated of order zero i.e. I (0).

#### 4.2 Co-Integration Test Result

A co-integration test was carried out to establish if there is a long relationship between the variables employed in this study using Engel- Granger two step approach. The result of the test is presented in the table below.

**Table 4.2 Engel- Granger Two Step Results**

Variable	ADT STAT	5% critical Value	Remark
Residual	-7.14	-2.9 4	Stationary

The result of the co-integration test in the table above reveals that the residual of the regression is stationary implying that the variables are co-integrated. We arrived at this conclusion because the ADF stat value of the residual is greater that the test critical value at 5% confidence level.

#### 4.3 Presentation of Ordinary Least Square Result

Presented below is the ordinary least square (OLS) estimated results showing household consumption expenditure (HCE) as the dependent variable and inflation (INF), interest rate (INT), Gross domestic product growth rate (GDPG) as explanatory variables.

**Table 4.3 OLS Estimates**

Variable	Coefficient	Std Error	t-statistics	Prob
INF	0.1124	0.0263	4.2720	0.00
INT	-0.3730	0.6812	-0.5475	0.58
GDPG	1.3512	0.3712	3.6397	0.00
C	4.5464	13.814	10.3291	0.74
$R^2 = 0.4811$ . Adj $R^2 = 0.4324$ . F- Stat = 9.88. DW- Stat= 2.42				

The estimated regression result in the table above shows that inflation rate has a positive statistically significant relationship with household consumption expenditure growth rate in Nigeria. Its coefficient and t- statistics are 0.1124 and 4.27 respectively. This implies that the higher the inflation rate the higher the expenditure on household consumption. This finding is consistent with the findings of De Mello and Carneiro (2010).

Interest rate on the other hand has a negative statistically insignificant relationship with household consumption expenditure in Nigeria. This means that a rise in interest rate will lead to a fall in household consumption expenditure. Its estimated coefficient and t- statistics values are -0.3729 and -0.5479 respectively. Again this relationship is consistent with consumption theory in economics an increase in interest rate, increases savings which reduces consumption. However the t- statistic value (-0.5479) shows that this negative influence of interest rate on consumption is not statistically significant.

The result further shows that Gross domestic product growth rate has a positive statistically significant relationship with household consumption expenditure in Nigeria. Its estimated coefficient and t- statistic are 1.35 and 3.64 respectively. This implies that increase in Gross domestic product increases household consumption expenditure in Nigeria. This finding is consistent with Keynes theory of consumption in economics.

The estimated value of  $R^2$  from the regression result is 0.4811. This indicates that about 48.11% of the total variations in household consumption expenditure are explained by inflation, interest rate and gross domestic product. Thus, the model fits the data fairly on the average.

Furthermore, conducting a test for the statistical stability of the model using f-test shows that the calculated t-statistic is 9.89 while the tabulated f-ratio is 2.84 (i.e.  $F_{0.05}^{tab, 3, 37} = 2.84$ ). Therefore since  $F^{cal} > F^{tab}$  (i.e.  $9.89 > 2.84$ ) we conclude that the model is statistically stable. This also suggests that the estimated model can be relied upon in forecasting into future occurrence.

Finally, a test for the existence of autocorrelation using Durbin Watson reveals that the model is free from the problem of serial autocorrelation. We arrived at this conclusion because the  $Dw^*$  is greater than the  $Du$  value (i.e.  $DW^* = 2.42 > DU = 1.66$ ).

## 5. Conclusion

### 5.1 Summary of Findings

The focus of this research study was to examine the effect of inflation on household consumption expenditure in Nigeria from 1981-2018. Following a detailed time series which involved the use of OLS estimation techniques, the empirical result of the study revealed the following:

1. There exists a positive significant long run relationship between inflation and household consumption expenditure growth rate in Nigeria. The implication of this finding is that inflation increases household consumption expenditure in Nigeria. For instance during inflation period, people spend more money on goods and services than during less inflationary periods.
2. Interest rate on the other hand had a negative but insignificant effect on household consumption expenditure implying that in Nigeria interest rate is not a significant variable influencing changes in household consumption expenditure growth rate.
3. The result also showed that there exists a positive significant relationship between gross domestic product growth rate and household consumption expenditure growth rate in Nigeria.

### 5.2 Policy Recommendation

Based on the empirical findings of the study, the following recommendations are suggested.

1. In order to reduce and minimize the effects of price increase of goods and services on the value of real wages, salaries, rent and thus household consumption expenditure then government at all times should seek to control the rate of inflation as this was shown in our study to have positively and significantly increased household consumption expenditure in Nigeria.
2. Consequently, the plan by the federal government to reduce inflation to a single digit as contained in the economic recovery growth plan (2017) should be vigorously pursued.
3. Finally, government should always try to maintain high and stable growth rates that will improve the welfare of its populace.

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