



# THE DYNAMIC RELATIONSHIP BETWEEN HOUSEHOLD CONSUMPTION EXPENDITURE AND INCOME INEQUALITY IN NIGERIA

**OWOEYE Taiwo (Ph.D)**

Professor, Department of Economics, Ekiti State University, Ado-Ekiti

**OLALERE Sunday Shina (Ph.D)**

Lecturer, Department of Economics, Ekiti State University, Ado-Ekiti

**ALADETANYE Tinuola Olawumi**

Postgraduate Student, Department of Economics, Ekiti State University, Ado-Ekiti

## Abstract

The study examined the dynamic relationship between Household Consumption Expenditure and Income Inequality in Nigeria from 1981 to 2019. The study employed Autoregressive Distributed Lag (ARDL) and Generalized Moment of Movement (GMM) as estimation techniques. The results showed that, Gini coefficient (as proxy for income inequality) demonstrate a positive but non-significant dynamic relationship with Household Consumption Expenditure in Nigeria. in line with the finding of this study, it is therefore recommended that, government should put more efforts in ensuring the reduction in the level of income inequality in Nigeria, even though it does not have a significant impact on Household Consumption Expenditure.

*Keywords: Income Inequality, Household Consumption Expenditure, ARDL, GMM and Nigeria.*

## 1.1 Introduction

There is no doubt that the issue of income inequality has received a lot of attention across the globe. Particularly the developing countries have focused their attention more on policy towards addressing the challenges posed by the income inequality in their various countries. With the help of the Industrial Revolution, the economies of Western Europe and North America began to diverge from the rest of the world, leading to a widening gap in national incomes. Inequality throughout the world increased, albeit more slowly, during much of the postwar period of the twentieth century. Inequality within industrialized economies was reduced as a result of the consequences of war and depression on higher incomes.

The policymakers in Nigeria share the concerns of their peers in other developing countries about widening income gaps. This is because income inequality is a serious problem in almost all economies today. Overall, income inequality is higher in developing economies than in developed ones (Maina, 2018). The world's developing countries have long suffered from significant poverty and wealth inequality. As Nigeria's economy rises, so also income gap increases in Nigeria. According to Babatunde (2008), the Gini coefficient in Nigeria increased from 38.1% in 1985 to 44.9% in 1992. The aggregate Gini for the National Living Standard Survey in 2004 was 0.580, with the Gini for rural areas being higher (Gini = 0.58) than for urban areas (Gini = 0.53).

In developing nations like Nigeria, where poverty is widespread and the economic growth rate is unstable, income inequality is one of the most pressing issues. The ability of economic progress to significantly alleviate poverty is hampered by widespread inequality. Inequality in the Nigerian setting looks to be growing. The National Bureau of Statistics (2012) reports that there is a large gap in the amount of money Nigerian families spend on goods and services. This disparity may be explained by a number of variables, including economic disparity, insecurity, and a lack of social infrastructure. The Kuznet hypothesis has been at the center of debate on the relationship between income inequality and household consumption expenditure all over the world. According to this theory, inequality rises at the start of development but falls down afterwards. The existence of a Kuznet curve in Africa, however, has been the subject of debate in the field of Economics (Fields, 2000). While economic development is vital to any economy's health, its ability to alleviate poverty is diminished in the face of extreme inequality. Many successful governments in Nigeria have initiated lots of policies and program aimed at reducing the income gap among the citizenry and stimulates economic growth through consumption expenditure of household. Such policies and programs include National Health Insurance Scheme (NHIS), the National Poverty Eradication Programme (NAPEP), and the Subsidy Re-Investment Program (SURE-P), have been launched in Nigeria to address the issue of income inequality. Despite these efforts, however, there has been no significant improvement the income-gap between the rich and poor in Nigeria.

Also, there is no consensus on the relationship between income inequality and household consumption from the finding of various researchers across globe. Various studies have been carried out on the relationship between household consumption expenditure and income inequality. These studies include Akekere and Yousuo (2012), Awe and Olawumi (2012), Thankgod (2014), Akinlade, Adeyonu, and Carim-Sanni (2015) Samuel (2017), Masayuki, Nao, and Tomoaki (2017), Azeez, Ojo, Olatunji, and Adebayo (2018). However, there are divergent opinions as regards the submissions of their studies and these researchers used a wide range of perspectives and methodologies in their work. Azeez, Ojo, Olatunji, and Adebayo (2018), examine income inequality among forest-related businesses held by rural households in South-Western Nigeria, using a linear regression model. The results find that, Gini coefficients for extremely poor (EP), moderately poor (MP), and non-poor (NP) families all decrease by 12.9%, 13.8%, and 10.7%, respectively. Akekere and Yousuo (2012) analyze private consumer spending in Nigeria in relation to GDP growth from 1981 to 2010. The study employs standard simple regression analysis. The findings indicate a positive and statistically significant link between GDP and private consumer expenditure in Nigeria. Awe and Olawumi (2012), look at the impact of income gap on the Nigerian economy, using co-integration technique. The results show that, Gini coefficient (as proxy for income inequality) is said to be inverse relationship with inflation, GDP, and social spending in Nigeria. Therefore, this study is attempts to investigate the relationship between household consumption and income inequality in Nigeria between 1980 and 2019.

## 1.2 Model Specification

In analyzing the dynamic relationship between household consumption expenditure and income inequality in Nigeria, the study adopts a linear single equation model. This model mirrors the work of Samuel (2017), with little modifications. The model specifies thus, consumption as a function of determinants variables including Land (LD), Dwelling Unit (DU), Education (ED), Household Type (HT), Sex (SEX), Salary Earners (SE), Ration Card (RC), Age(AGE), household size (hz) and free meal (fm). The adapted model is as represented in linear form in equ 1

$$CE_{it} = \varphi_0 + \varphi_1 ld_{it} + \varphi_2 du + \varphi_3 ed_{it} + \varphi_4 ht_{it} + \varphi_5 sex_{it} + \varphi_6 se_{it} + \varphi_7 rc_{it} + \varphi_8 hz_{it} + \varphi_9 fm_{it} + \varepsilon_{3t} \quad \text{equ 1}$$

This study thus adopts the model by modifying the model with inclusion of these variables: consumption expenditure by aggregated variables such Household Consumption (HCH), Literacy Rate (LR), Aggregate Savings (AGS) Population Size (POPZ), Population Growth Rate (PGR), Government Expenditure , (GEXP), Inflation Rate (INFR), Interest Rate (INTR).

$$HCH = f(GC, LR, AGS, POPZ, PGR, GEXP, INF, INT) \quad \dots \text{equ. 2}$$

The model is explicitly specified thus:

$$HCH_t = \varphi_0 + \varphi_1 GC_t + \varphi_2 LR_t + \varphi_3 AGS_t + \varphi_4 POPZ_t + \varphi_5 PGR_t + \varphi_6 GEXP_t + \varphi_7 INF_t + \varphi_8 INT_t + \mu_t \text{ equ.3 Where:}$$

HCE is Household Consumption Expenditure, GC is Gini Coefficient, AGS is Aggregate Savings, LR is Literacy Rate, POPZ is Population Size, PGR is Population growth rate, GEXP is Government Expenditure, INF is Inflation rate and INT is Interest Rate and  $U_t$  Stochastic Error Term.  $\varphi_1, \varphi_2, \varphi_3, \varphi_4, \varphi_5, \varphi_6, \varphi_7$  and  $\varphi_8$  are the coefficient of the variables while  $\varphi_0$  is constant value which represents the point of intercept.

### 1.3 Source of Data

The data set for this study comprises of annual time series spanning from 1980 to 2017 for the purpose of investigating the impact of oil price volatility on sustainable output growth in Nigeria. Data on Household Consumption (HCH), Literacy Rate (LR), Aggregate Savings (AGS), Population Size (POPZ), Population Growth Rate (PGR), Government Expenditure, (GEXP), Inflation Rate (INFR) and Interest Rate (INTR) are sourced from World Development Indicator WDI (2020).

### 1.4 Estimation Technique

The estimation techniques employ in this study are Auto-regressive Distribution Lag (ARDL) and Generalized Method of Movement (GMM). Unit root test is carried out to determine the time series characteristics of the variables in the study while examine both the short run and long run relationship between Household Consumption Expenditure and Income Inequality in Nigeria, ARDL estimation technique was employed. GMM was used to capture the dynamism in the relationship between Household Consumption Expenditure and Income Inequality in Nigeria.

### 1.5 Results and Discussion of Findings

**Table 1.1 Descriptive Statistics of Variables**

	HCE	GC	LR	AGS	POPZ	PGR	INF	INT	GEXP
Mean	151.7791	41.8612	55.8714	3331.829	127.9573	2.5817	15.9003	17.5112	2040.908
Median	96.9163	41.4000	55.2222	385.1909	122.2839	2.5857	10.8400	17.5000	947.6900
Maximum	290.8340	51.9000	70.1984	17040.72	200.9636	2.7098	72.8400	29.8000	9714.840
Minimum	55.1272	35.1000	51.0777	6.5626	75.4405	2.4888	5.3800	7.75000	9.6400
Std. Dev.	85.4436	3.6488	4.4586	5030.569	37.3032	0.0669	15.4522	4.5834	2544.412
Skewness	0.4245	0.7564	1.7809	1.3703	0.3721	0.1071	2.4489	0.2441	1.25230
Kurtosis	1.560011	3.7126	6.4382	3.5154	1.9603	1.7481	8.0919	3.7258	3.7161
Jarque-Bera	4.5406	4.5441	39.826	12.6364	2.6563	2.6214	81.1140	1.2433	11.0376
Prob	0.1033	0.1031	0.0000	0.0018	0.2640	0.2696	0.0000	0.5371	0.0040
Obs	39	39	39	39	39	39	39	39	39

**Source: Author's Computation, 2021**

**Note:** HCE= Household Consumption Expenditure (Billion USD); GC=Gini Coefficient (index); LR= Literacy rate (% of population above 15years); AGS= Aggregate savings (Billion naira); POPZ= Population size (million people); PGR= population growth rate (%); INF= Inflation rate (%); INT= Interest rate (%); GEXP= Government expenditure (Billion naira)

Table 1.1 presents descriptive statistics of variables employed in the study. Result showed that government expenditure has the highest mean value of 2040.908 billion naira while population growth rate has the lowest mean value of 2.58%. Result also indicated that the maximum value population growth recorded the lowest value of 2.71% while government expenditure has highest value of 9714.84 billion naira under the maximum value. Skewness statistics showed that all the variables are skewed to the right while kurtosis statistics indicated that household consumption expenditure, population size and population growth are platykurtic by peakedness while other variables are leptokurtic by peakedness. Jarquebera statistics result in addition showed that all the variables are normally distributed except literacy rate, aggregate savings, inflation rate and government expenditure.

### 1.4.1 Correlation Analysis

**Table 1.2 Correlation Matrix**

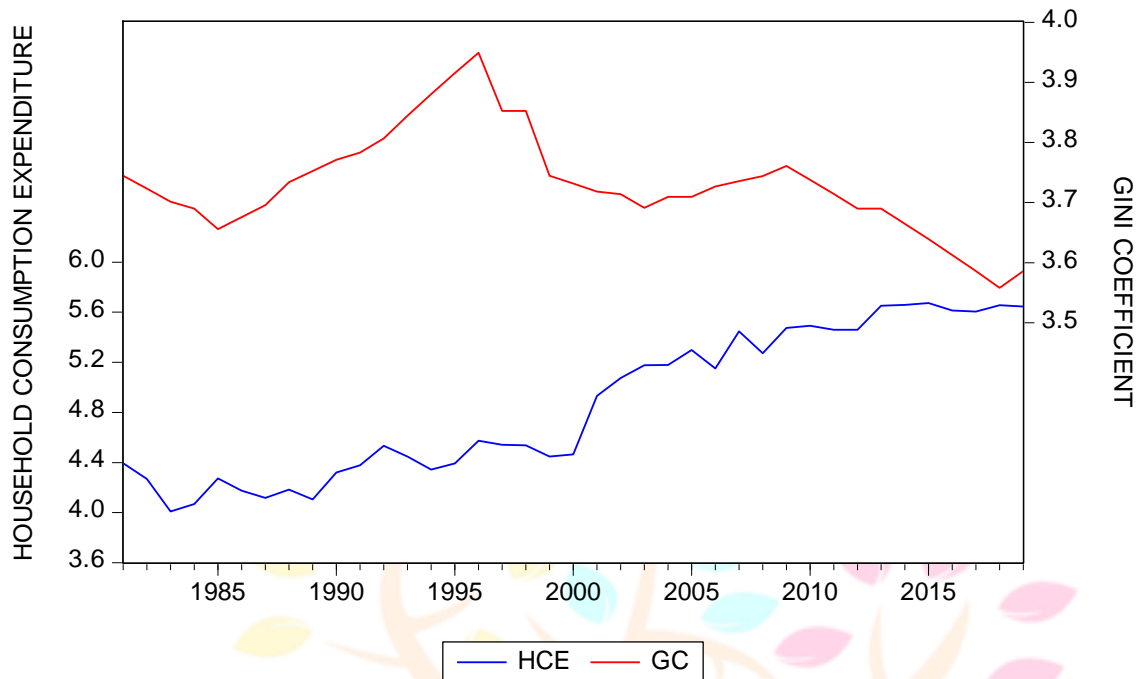
	HCE	GC	LR	AGS	POPZ	PGR	INF	INT	GEXP
HCE	1.0000								
GC	-0.5502	1.0000							
LR	0.1019	-0.1767	1.0000						
AGS	0.8789	-0.6252	0.1313	1.0000					
POPZ	0.9622	-0.4938	0.1555	0.8984	1.0000				
PGR	0.5390	-0.5015	-0.1230	0.4627	0.3815	1.0000			
INF	-0.1688	0.5762	-0.0273	-0.1358	-0.0961	-0.4551	1.0000		
INT	-0.0051	0.3099	-0.0124	-0.1041	0.0845	-0.2917	0.3516	1.0000	
GEXP	0.9139	-0.6129	0.1651	0.9732	0.9391	0.4579	-0.1485	0.08223	1.0000

**Source: Author's Computation, 2021**

Table 1.2 presented correlation coefficients matrix of the pairs of variables employed in the study. Reported correlation coefficients showed that there is a negative relationship between household consumption expenditure and variables including Gini coefficient (-0.5502816), inflation rate (-0.1687754) and interest rate (-0.005059), while household consumption expenditure has positive relationship with variables including literacy rate (0.1019022), aggregate savings (0.8788603), population size (0.962173), population growth (0.5389608) and government expenditure (0.9139064). This indicated the household consumption expenditure moves in the same direction with literacy rate, aggregate saving, population size, population growth and government expenditure, but household expenditure moves in different direction when compared with Gini coefficient, inflation rate and interest rate. This is in line with the findings of Christian and Paul-Francois (2017), Chigbu and Emmanuel (2015) as well as Nahange and Christian (2014), although there are different in scope covered.

Result also showed that Gini coefficient has negative relationship with literacy rate (-0.1767376), aggregate savings (-0.6251875), population size (-0.493779), population growth (-0.501491) and government expenditure (-0.615060) while Gini coefficient has positive connection with inflation rate (0.5762261) and interest rate (0.3098746). Result in addition revealed that literacy rate has positive connection with population growth rate (-0.122947), inflation (-0.027256) and interest rate (-0.012381) while literacy rate has positive relationship with aggregate savings (0.131327), population size (0.1155469), and government expenditure (0.165060). This means that Gini coefficient moves in same direction with interest rate and inflation rate, but in different direction with literacy rate, aggregate saving, population size, population growth and government expenditure. This is in consonance with the submission of Masayaki, Nao and Tomosaki (2017) among others despite the differences in the context of the studies. Result also revealed that aggregate savings has negative association with inflation rate (-0.135765) and interest rate (-0.104095), while aggregate saving has positive relationship with population size (0.898375), population growth (0.462735) and government expenditure (0.9732279). Correlation matrix indicated that population size has negative relationship with inflation rate (-0.0960621) but positive association with population growth (0.381468), interest rate (0.0845398) and government expenditure (0.939102). Result showed that population growth rate has negative relationship with inflation rate (-0.4551194) and interest rate (-0.2916690) but positive relationship with government expenditure. Result further revealed that inflation rate has positive relationship with interest rate (0.351851) but negative relationship with government expenditure (-0.14845) and that interest rate has negative association with government expenditure (-0.08223).

### 1.4.2 Trend Analysis of Income Inequality and Household Consumption Expenditure in Nigeria



**Figure 1.1:** Trend of income inequality and household consumption expenditure in Nigeria (1981-2019)

Figure 1.1 showed income inequality and household consumption expenditure in Nigeria moves in opposite direction for the period covered in the study (1981-2019). The figure showed household consumption expenditure continuous increase in a wave like pattern between the period 1981 and 2019. As shown in the figure, Gini coefficient rose between 1981 and 1998 but decline between 1998 and 2019. Overall, the trend showed that between 1981 and 2019, Gini coefficient trend downward but household consumption expenditure trend upward. Hence, it can be deduced that income inequality and household consumption expenditure moves predominantly in opposite direction. The observed sharp downward move in income inequality in the year 2000 could be attributed to the move by the nation toward meeting the trajectories of millennium development goals especially in the area eradication of extreme poverty and hunger, as well as promotion of gender equality and women empowerment.

### 1.4.3 Unit Root Test

A unit root test was conducted to determine the inherent stationary characteristics and predictive attributes of the variables. The presence of a unit root signifies that the examined time series lacks stationarity, whereas the absence of a unit root indicates a stationary series. This test elucidates the order of integration for each variable, offering insights into how these variables respond to external shocks. In this study, the Augmented Dickey-Fuller (ADF) test was employed as the chosen unit root test methodology. The outcomes of this analysis, encapsulating the results of the ADF tests, are succinctly summarized and presented in Table 1.3.

**Table 1.3 Summary of Unit Root Test Result**

At Level				At First Difference			
Variables	ADF statistics	1% critical value	5% critical value	ADF statistics	1% critical value	5% critical value	Order of integration
HCE	-0.3206	-3.6156	-2.9412	-6.9116*	-3.6210	-2.9434	I(1)
GC	-2.3976	-3.6268	-2.9458	-4.3269*	-3.6268	-2.9458	I(1)
LR	-3.8261*	-3.6210	-2.9434	---	---	---	I(0)
AGS	-0.7336	-3.6156	-2.9412	-4.4903*	-3.6210	-2.9434	I(1)
POPZ	0.6298	-3.6210	-2.9434	-6.7975*	-3.6617	-2.9604	I(1)
PGR	-6.7804*	-3.6537	-2.9571	---	---	---	I(0)

INF	-2.8704	-3.6210	-2.9434	-5.1239*	-3.6210	-2.9434	I(1)
INT	-3.5716*	-3.6156	-2.9412	---	---	---	I(0)
GEXP	-1.4212	-3.6210	-2.9434	-7.4978*	-3.6210	-2.9434	I(1)

Source: Author's Computation, 2021

Note: \*(\*\*) connote significance at 1% and 5% significant levels respectively

The test outcomes, as presented in Table 1.3, indicate that with the exception of literacy rate, population growth rate, and interest rate, the variables utilized in this study exhibit non-stationarity at the level. However, upon application of first differencing, these variables attain stationarity. This implies that the majority of the variables retain innovative shocks for only a brief temporal span before dissipating. In essence, the results underscore that household consumption expenditure, Gini coefficient, aggregate savings, population size, inflation rate, and government expenditure exhibit an integration order of one (I(1)), indicating a propensity to revert to their mean over time. Conversely, literacy rate, population growth rate, and interest rate exhibit an integration order of zero (I(0)), signifying a sustained, unchanging behavior over time.

#### 1.4.4 Co-integration Test

Table 1.4: ARDL Co-integration Bound Test (Model 1)

F-Statistic	Lower Bound Critical Value	Upper Bound Critical Value
7.9905	2.45	3.61

Source: Author's Computation, 2021

Note: critical values are values at 5% significant level.

In Table 1.4, both lower and upper bound critical values are documented alongside the F-statistics derived from the Wald test, which was conducted to examine the collective null hypothesis that the coefficients of the lagged level variables are zero. This hypothesis assesses the absence of a long-term relationship between the variables. The obtained result yields an F-statistics value of 7.9905, accompanied by corresponding lower and upper bound critical values of 2.45 and 3.61, respectively. A comparative analysis between the calculated F-statistic and the critical values unveils that the F-statistic surpasses the upper bound critical value. This condition aligns with the requirement for rejecting the null hypothesis that suggests the lack of a long-term relationship. Consequently, this study attains the basis to reject the null hypothesis and, instead, embraces the alternative hypothesis positing the presence of a long-term relationship among the variables.

Table 1.5: ARDL Short Run and Long run Estimation Result

Series: HCE LR AGS POPZ PGR INF INT

Short run estimation				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HCE(-1))	2.167576*	0.363436	5.964116	0.0001
D(HCE(-2))	1.599588*	0.277905	5.755881	0.0001
D(HCE(-3))	0.659291*	0.192703	3.421271	0.0057
D(LR)	-0.450695	0.337896	-1.333828	0.2092
D(LR(-1))	0.943523*	0.302790	3.116096	0.0098
D(LR(-2))	-0.202283	0.234860	-0.861289	0.4075
D(AGS)	0.707068*	0.152741	4.629182	0.0007
D(AGS(-1))	-0.039495	0.166212	-0.237616	0.8165
D(AGS(-2))	0.314264	0.206357	1.522912	0.1560
D(POPZ)	-3.569334*	6.726729	-5.306197	0.0003
D(PGR)	9.784155*	1.691650	5.783781	0.0001
D(PGR(-1))	-2.243681	2.588379	-0.866829	0.4045
D(PGR(-2))	-1.058639	9.612975	-1.101256	0.2943
D(INF)	0.026592	0.044061	0.603518	0.5584
D(INF(-1))	-0.047312	0.048769	-0.970113	0.3528

D(INF (-2))	-0.200098*	0.046570	-4.296722	0.0013
D(INT)	-0.028898	0.126099	-0.229166	0.8229
CointEq(-1)	-3.842825*	0.507910	-7.565953	0.0000
Cointeq = HCE - (-0.2742*LR + 0.0808*AGS + 1.1522*POPZ + 245.5108				
*PGR + 0.1151*INF -0.0075*INT + 6.5689 )				
Long Run Estimation				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LR**	-0.274247	0.136424	-2.010252	0.0696
AGS	0.080821	0.071429	1.131493	0.2819
POPZ	1.152197	0.635754	1.812332	0.0973
PGR*	2.455107	3.955138	6.207363	0.0001
INF*	0.115143	0.011422	10.081163	0.0000
INT	-0.007520	0.032791	-0.229331	0.8228
C	6.568949	4.739233	1.386079	0.1932

**Source: Author's Computation, 2021**

**Note:** \*(\*\*) connote significant at 1% and (5%) level of significance

Estimation result presented in table 4.5 revealed both the short run and the long run estimation result. Result showed that on the short run literacy rate in the same period exert insignificant negative impact on household consumption expenditure, with report coefficient estimate of -0.450695 ( $p = 0.2092 > 0.05$ ). Notably, result revealed that a period lag of literacy rate has positive significant effect on human consumption expenditure with coefficient of 0.943523 ( $p = 0.0098 < 0.05$ ) while two period lag in literacy rate has negative insignificant effect on household consumption expenditure given the coefficient estimate of -0.202283 ( $p = 0.4075 > 0.05$ ). Result also showed that on the short run aggregate savings in the same period has positive significant effect on household consumption expenditure to the tune of 0.707068 ( $p = 0.0007 < 0.05$ ). Observably, result showed that a period lag and two lag of aggregate savings has negative and positive insignificant respectively on household consumption with coefficient of -0.039495 ( $p = 0.8165 > 0.05$ ) for one period and 0.314264 ( $p = 0.1560 > 0.05$ ) for two period lag of aggregate savings. Result on the short run in addition indicated that population size in the same period has negative significant effect on household consumption expenditure given the coefficient and probability of -3.569334 and 0.0003 ( $p < 0.05$ ).

Result revealed that on the short run population growth rate in the same period had positive significant effect on household consumption expenditure with coefficient of 9.784155 ( $p = 0.0001 < 0.05$ ). A period lag in population growth and two period lag in population growth has negative insignificant effect on household consumption expenditure to the tune of -2.243681 ( $p = 0.4045 > 0.05$ ) and -1.058639 ( $p = 0.2943 > 0.05$ ) respectively. Result further depicted that inflation rate had positive insignificant effect on household consumption expenditure with coefficient and probability of 0.026592 and 0.5582 ( $p > 0.05$ ). Observably, result indicated that one period lag in inflation rate and two period lag in inflation rate has negative effect on household consumption expenditure but effect of one period lag was insignificant given the coefficient of -0.047312 ( $p = 0.3528 > 0.05$ ) and -0.200098 ( $p = 0.0013 < 0.05$ ) respectively. Result furthermore revealed that on the short run interest rate in the same period has negative insignificant effect on household consumption expenditure to the tune of -0.028898 ( $p = 0.8229 > 0.05$ ). Reported ECT(-1) reflect that about 384% of the short run inconsistencies is corrected and incorporated into the long run dynamic annually, with reported probability value of 0.0000  $< 0.05$  and 0.01 showing significant speed of adjustment at 5% and 1% level of significance.

The long run estimation result showed that literacy rate and interest rate has negative insignificant effect on household consumption expenditure with reported coefficient and probability of -0.274247 and 0.0696 ( $p > 0.05$ ) for literacy rate as well as -0.007520 and 0.8228 ( $p > 0.05$ ) for interest rate. Result also revealed that aggregate savings and population size exert positive insignificant effect on household consumption expenditure on the long run to the tune of 0.080821 ( $p = 0.2819 > 0.05$ ) for aggregate savings and -0.007520 ( $p = 0.1932 > 0.05$ ) for interest rate. Result further indicated that population growth rate and inflation rate has positive significant effect on household consumption expenditure given coefficient and probability of 2.455107 and 0.0001 ( $p < 0.05$ ) for population growth rate as well as 0.115143 and 0.0000 ( $p < 0.05$ ) for inflation rate.

**Table 1.6: Post Estimation Test**

Linearity Test		
<i>Statistics</i>	<i>Values</i>	<i>Probability</i>
T-statistic	1.285387	0.2276
F-statistic	1.652219	0.2276
Normality Test		
<i>Statistics</i>	<i>Values</i>	<i>Probability</i>
Jarque-Bera Stat	0.070569	0.965331
Serial Correlation LM Test		
<i>Statistics</i>	<i>Values</i>	<i>Probability</i>
F-statistic	3.850736	0.0619
Heteroscedasticity Test		
<i>Statistics</i>	<i>Values</i>	<i>Probability</i>
F-statistic	1.222957	0.3760

Source: Author's Computation, 2021

The findings from the Ramsey test are presented comprehensively in Table 4.6, showcasing an array of statistical measures such as t-statistics and f-statistics, each accompanied by their corresponding probability values. Notably, the reported t-statistics and f-statistics stand at 1.285387 ( $p= 0.2276 > 0.05$ ) and 1.652219 ( $p= 0.2276 > 0.05$ ) respectively. These results signify a lack of substantial evidence to warrant the rejection of the null hypothesis asserting the correct specification of the model. Examining the Jarque-Bera statistics value for the error term in the estimated models, the recorded figure is 0.070569 ( $p= 0.965331 > 0.05$ ). This observation indicates that there is inadequate justification to dismiss the null hypothesis suggesting normal distribution of the error term, thereby reinforcing the assumption of normal distribution. Further insights are gleaned from the Breusch-Godfrey serial correlation LM test, yielding a result of 3.850736 ( $p= 0.0619 > 0.05$ ). This outcome supports the conclusion that no significant evidence exists to warrant the rejection of the null hypothesis positing the absence of serial correlation between successive error term values in the estimated models. Consequently, any concerns related to serial autocorrelation in the estimated models are dispelled. The evaluation of heteroscedasticity, as denoted by F-statistics and probability values of 1.222957 and 0.3760 respectively, reveals no compelling grounds to refute the null hypothesis advocating constant variance of the error term (homoscedasticity). This assessment solidifies the confirmation that heteroscedasticity is not a prevailing issue within the error term of the estimated models.

#### 1.4.5 Analysis of Dynamic Relationship between Household Consumption Expenditure and Income Inequality in Nigeria

**Table 1.7: GMM Estimation Result**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.252375	3.151288	0.080086	0.9367
HCE(-1)	0.933183*	0.326086	2.861772	0.0075
GC	-0.351462	2.486052	-0.141374	0.8885
GC(-1)	0.239817	2.754770	0.087055	0.9312
GEXP	0.018534	0.089207	0.207766	0.8368
INF	-0.002603	0.069439	-0.037479	0.9703
INT	0.144210	0.189936	0.759257	0.4534

R-square= 0.650895

Adjusted R-square=0.641391

Durbin Watson=2.427347

Table 1.7 presented the GMM estimation result on the dynamic relationship between household consumption expenditure and income inequality in Nigeria. Result showed that one lag in household consumption has positive significant effect on household consumption expenditure to the tune of 0.933183 ( $p= 0.0075$ ). Result also showed that Gini coefficient and inflation rate has negative insignificant effect on household consumption expenditure given coefficient estimate of -0.351462 ( $p= 0.8885 > 0.05$ ) for gini coefficient and -0.002603 ( $p= 0.9703 > 0.05$ ).



Notably, result revealed that one lag in gini coefficient has positive insignificant effect on household consumption expenditure with reported coefficient and probability of 0.239817 and 0.9312 ( $p > 0.05$ ) respectively. Result further showed that government expenditure and interest rate exert positive insignificant effect on household consumption expenditure with coefficients of 0.018534 ( $p = 0.8368 > 0.05$ ) and 0.144210 ( $p = 0.4534 > 0.05$ ) respectively. Reported R-square statistics of 0.650895 reflect that about 65% systematic variation in household consumption expenditure can be explained by one lag in household consumption expenditure, Gini coefficient, one lag in Gini coefficient, government expenditure, inflation rate and interest rate.

#### 1.4.6 Discussion of Findings

Result based on the third objective of the study revealed that one lag of Gini coefficient had positive but insignificant effect on household consumption expenditure. With an increase in one lag in Gini coefficient, there is tendency for increase in household consumption expenditure. This means that previous level of gap between the rich and poor has positive influence on the current level of household consumption expenditure. That is, even when the current Gini coefficient remains unchanged increase in the income gap between the rich and poor can prompt an increase in the level of household expenditure and vice versa. It shows that the consumption pattern of household unit increase despite their relative poverty. This could be because of government supports such as National Poverty Eradication Program as well as subsidy re-investment program among others which raises the spending capacity of the people. However, the relationship was found insignificant which could be as a result of inappropriate utilization of government support. This is because most people who have access to government rather harnessed them in non-durable consumption rather than durable consumption. Hence, there has been no appreciable improvement in living standard which can effectively enhanced consumption expenditure.

Findings of this study are in congruence with submissions and conclusions of previous studies such as Christiana and Paul-Francois (2017), Paul-Francois and Thandiwe (2018). Notably, Christiana and Paul-Francois (2017) on study in Ghana for the period 1961-2013 submitted that household consumption expenditure is only affected by changes in price level. Paul-Fraicos and Thandiwe (2018) change in price level has negative effect on real consumption expenditure in South Africa. Inflation expectations may be associated with higher spending when expected real wage growth is held constant. The finding of this study also relate to the relative income hypothesis of James Dusenbury which claimed that an individual consumption pattern depends on its relative position in the income distribution in the society rather than its absolute level. This means that the consumption pattern of an individual or household depends on his income relative to the income of other people in the society.

#### 1.5 Conclusion

Based on these findings, this study concluded that aggregate savings, population size, population growth and inflation rate are determinants of household consumption expenditure in Nigeria. On the short variables aggregate savings, population size, and population growth rate are significant determinants of household consumption expenditure in Nigeria while on the long run determinant variables are population growth rate and the level of inflation. This study also concluded that the dynamic relationship between income inequality and household consumption expenditure is not significant. The study reflects that when previous level of income inequality worsens, there is still tendency for household to increase the level of consumption spending, but not significantly. Overall, this study concluded that income inequality had no significant relationship with household consumption expenditure in Nigeria, but household consumption expenditure depends on aggregate savings, population size and population growth.

#### 1.6 Recommendation

In line with the findings of this study, the following recommendations were made that:

- i. Government should put more effort into ensuring reduction in income inequality even though it may not affect household consumption expenditure, since it is connected to those factors that determine consumption expenditure as the household level.
- ii. Government should ensure to put in more measures to enhance aggregate savings in the country since this will contribute to household consumption expenditure in the country
- iii. Government needs to put in place measures to encourage decrease in population size, in ways that do not poses harm to the people, so as to facilitate increase in household consumption expenditure.

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