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THE DETERMINANTS OF AGGREGATE CONSUMPTION EXPENDITURE: EMPIRICAL EVIDENCE FROM NIGERIA

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Abstract

This study investigated the determinants of aggregate consumption expenditure in Nigeria. The model employed was derived from the Keynesian consumption function where consumption is explained by variations in income; C= f(Y). The study covered the period of 1981 – 2015. The study estimated an error correction model (ECM) using ordinary least squares estimation technique. The study showed that income (proxy by gross domestic product) has a positive significant impact on aggregate consumption expenditure in Nigeria. It was recommended that employers of labour should endeavor to increase the workers' salaries periodically in line with the changes in the country's macroeconomic and microeconomic variables. It is only when salaries are increased in line with the prevailing economic situations in the country that consumers can improve on their consumption expenditure through increase in their disposable income. Policies which reduce tax should also be formulated to enhance consumers' disposable income. The Nigerian government should make amiable efforts to provide infrastructures, security and enabling environment for business to strive as good performance of business in the country will improve the returns on investment and finally impact positively on aggregate consumption expenditure.

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1.0 Introduction

The question of what determines aggregate consumption expenditure remains in the center of discussions among economists. Aggregate consumption is one of the key macroeconomic aggregates that have attracted the interest of economists and researchers long ago. The reasons posted by various debaters for engaging in such debates over the role of consumption and its determinants spread over the key position of aggregate consumption expenditure in determining aggregate level of output and the stability of consumption expenditure (Iyoha, 2004). The debate on what determine aggregate consumption started with John Maynard Keynes in 1936. Keynes was systematic and definite in answering the question of what determines aggregate consumption expenditure. Keynes pointed out that aggregate consumption expenditure is determined by aggregate current income. Keynes' determination was faulted and stimulated further inquires on what determines aggregate corruption. Professor Simon Kuznet, at Harvard University, in 1943, posted that consumption was not determined by current income alone but other factors like age and educational attainment hold sway in determining consumption. Kuznet came up with two consumption functions which triggered off further investigation on what determines aggregate consumption and the reconciliation of the two consumption functions.

In an attempt to reconcile the two types of consumption functions; Paul Samuelson resorted to the use of the Rachet Model. The Ratchet Theory attracted the attention of Deuserbury and Modigliani independently, and Deuserbury came up with the relative consumption hypothesis which states that consumption does not depend only on current level of income but also on relative income; that individual finds it difficult to change their consumption pattern even during long run cyclical fluctuations. Also, consumption depends on the persons individual associates with (Jhingan, 2002). The work of Deuserbury influenced the efforts of Milton Friedman who pointed out that consumption is determined by permanent income; which is the average expected income of individual household over a period of 3-5 years (Ezeji and Ajudua, 2015). Modigliani and Blumberg(1954) argued that consumption is determined by life income of individual. They argued that individuals spend all the income saved during retirement before they die. The debate of what determine aggregate consumption is crucial to the understanding of macroeconomic fluctuation of any economy. The decision to consume determines the decision to invest as what is not consumed is saved and eventually invested (Copeland, Weston and Shashri, 2005).

Aggregate consumption expenditure is a major component of aggregate demand and aggregate demand is the mechanism used for determining equilibrium income in the Keynesian model (Iyoha, 2001). The relevance of consumption expenditure is enormous as it forms the large component of aggregate demand. For many reasons, it becomes very imperative that we find out the determinant of aggregate consumption expenditure in Nigeria. Brason, 1989 argues that consumption expenditure accounts for about two-third of aggregate expenditure in virtually all economies of the world. Consumption, according to Jhinghan 2002, is the use of goods and services for the purpose of derivation of satisfaction. Dernburg (1985) defines consumption as the act of using goods and services for the purpose of satisfying man's unlimited needs. These definitions are connected to the importance of consumption in welfare maximization. Consumption expenditure in goods and services shows the general position of any economy (Chigbu & Asuda, 2015).

It follows that the aggregate consumption and savings behaviors of individuals and firms have a powerful influence on the economy's long term productive capacity since consumption accounts for a major portion of aggregate output. From the above, what determine consumption expenditure have influenced economists like, Keynes (1936), Kuznet (1943), Deuserbury (1947), Modigliani-Brumberg (1954), Friedman (1957) and Modighani (1963). Consumption decision plays a key role in determining aggregate output (Copeland, Weston and Shashri, 2005). In Nigeria, consumption expenditure has been on the increase.

Therefore, the main purpose of this paper is to empirically investigate the determinants of aggregate consumption expenditure in Nigeria. Nigeria is the largest community in the ECOWAS sub-region, with a population of about 186 million people (World Bank, 2016). Aggregate consumption expenditure accounts for about two-third of aggregate demand in Nigeria like in most other economies of the world (Brason, 1989).

The overall aim of this study is to contribute to the existing literature on the determinants of aggregates consumption expenditure in Nigeria. Apart from investigating the determinants of aggregate consumption expenditure in Nigeria, the study will make recommendations on how policy makers can use aggregate consumption expenditure variable to propel growth in the

Nigerian economy. The findings of this study will be of great importance to both academicians and policy makers in Nigeria.

This paper has seven sections. Section one presents the introduction and background information on the study. Section two discusses the aggregate consumption expenditure and economic growth patterns in Nigeria. Section three contains the theoretical and empirical literature while section four presents the method of the study and sources of data. Section five presents the results of estimations and section six discusses the results. Section seven contains the conclusion, policy implication and recommendations.

2.0 Brief Overview of Nigeria Aggregate Consumption Expenditure and Growth Patterns

Understanding the determinants of consumption behavior has been a central macroeconomics issue since the time of John Maynard Keynes. Nigeria consumption expenditure has been on the increase for decades. What determines consumption in Nigeria has been a matter of concern to many economists. The understanding of the pattern of aggregate consumption expenditure in Nigeria can be enhanced looking at the table below:

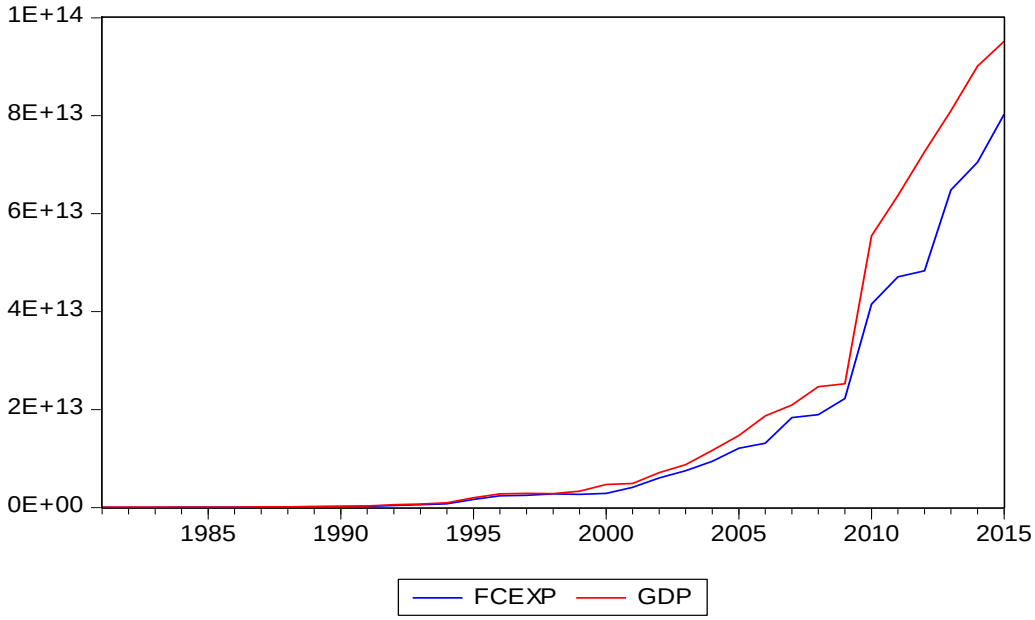
Table 1: Share of Aggregate Consumption Expenditure of Aggregate Output

Year	GCE	GDP	GCE % GDP	Year	GCE	GDP	GCE % GDP
1981	36159200000	51731790000	0.699	1999	268608685000	3312240870000	0.819
1982	38817680000	53658950000	0.723	2000	2872324550000	4717332100000	0.609
1983	44104330000	57963310000	0.761	2001	4090760270000	4909526480000	0.833
1984	51317860000	64326340000	0.798	2002	6018479000000	7128203100000	0.844
1985	58666110000	73542020000	0.798	2003	7495034760000	8742646650000	0.857
1986	60961960000	74908220000	0.814	2004	9423551590000	11673602240000	0.807
1987	84045520000	111912930000	0.760	2005	12078162200000	14735323980000	0.820
1988	117989570000	147941130000	0.796	2006	13117980280000	18709786480000	0.701
1989	138629890000	228451460000	0.607	2007	18375532760000	20940910900000	0.878
1990	191212020000	281550270000	0.679	2008	18961874810000	24665244300000	0.769

1991	222718310000	329070750000	0.677	2009	22250887090000	25236056300000	0.882
1992	406641850000	555445510000	0.732	2010	41509052800000	55469350300000	0.748
1993	549571650000	715241870000	0.678	2011	47098516900000	63713359400000	0.739
1994	780009370000	945557020000	0.825	2012	48347688600000	72599630000000	0.666
1995	1630183030000	2008564010000	0.812	2013	64844540280000	81009964600000	0.801
1996	2404655850000	2799036110000	0.859	2014	70498153710000	90136985000000	0.782
1997	2468848050000	2906624880000	0.850	2015	80301814000000	95177736580000	0.844
1998	2764875430000	2816406010000	0.982				

Source: World Development Indicators/Author's computation

A careful examination of the details in table 1 above, final consumption accounted for about 70 percent of aggregate demand in 1981. It rose to 81% in 1986 and it fell gradually to 61% in 1989. Thereafter, it rose up to 83% in 1994. The Nigeria final consumption expenditure accounted for about 98 percent of aggregate demand in 1998. Final consumption on goods and services in Nigeria has been on the increase as its average share is about 78% of aggregate demand during the period of this study.



Aggregate consumption expenditure (FCEXP) and total national output(GDP) in Nigeria have been on the increase. The above graph shows that the rise in total national output and aggregate consumption expenditure has been increasing annually from 1981 to 2015.

From the foregoing, the large share of final consumption expenditure of aggregate demand in Nigeria cannot be overlooked hence this research of what determines final consumption in Nigeria is imperative.

3.0 Review of Theories and Evidence

3.1 Review of theoretical Literature

3.1.1. Keynes' Absolute Income Hypothesis

John Maynard Keynes was the first to answer the question of what determines consumption in an economy. Keynes hypothesized that current consumption is a function of current level of income; $C=f(y)$, $f>0$_____(i)

Equation one shows that a positive relationship exists between consumption and income. Keynes hypothesized that the consumption function is upward loping with an MPC between zero and unity**.** Keynes went further to postulate that the MPC falls as income increases, which implies that the APS will rise as income increases. And the APC, which is the portion of income consumed**,** will fall as income increases. Keynes posted that the MPC of low income group is higher than the MPC of the higher income group in the society. Therefore, economic policy to redistribute income from the rich to the poor will be a tool to improve aggregate consumption as well as employment and national income (Iyoha, 2004).

After World War II, Keynes' hypotheses were subjected to empirical testing following the availability of national income data by Professor Simon Kuznet. The empirical results obtained proved that Keynes' findings on the determinant of consumption were inadequate. Kuznet found that consumption does not depend on income alone as postulated by Keynes, but also on wealth of the consumer. He further found that two consumption functions exist; the short run and the long run consumption functions. The existence of two consumption functions and the upward shift of the short run consumption function created a confusion which needed to be resolved. The attempt to resolve the differences between Keynes and Kuznet's findings, Paul Samuelson introduced the rachet model to explain the existence of the two consumption functions and the upward drift of the short run consumption function (Iyoha 2004).

3.1.2 **Deuserbury's Relative Income Hypothesis**

Deuserbury (1949) had keen interest in the rachet model, and that prompted him to come up with a theory known as relative income hypothesis to explain the secular upward drift of the short-run consumption functions and to reconcile them with the long-run consumption function. The relative income distribution of the population plays a crucial role in the formulation of Deuserbury's theory of relative income hypothesis ((Fasoranti, 2012). Deuserbury attempted to explain how the short-run consumption functions drifts upward over time. He hinged his explanations on psychological and sociological factors. Deuserbury argued that people prefer high quality goods to low quality goods; people consumption is influenced by those persons they associate with. Deuserbury assumed that utility functions are interdependence and affirmed people find it hard to reverse their consumption habit.

3.1.3. **Friedman's Permanent Income Hypothesis**

Professor Milton Friedman hypothesized that the main determinant of consumption expenditures is "permanent income"**.** He defined permanent income to cover average income which a household expects to earn over its planning horizon. Friedman was vague about the length of the household planning horizon, but suggested that it could be 3-5 years. Friedman assumed that consumption in any period depends on wealth and interest rate in the period;

C=f(W,i)----------(ii)

Where C stands for consumption, W stands for wealth and i stand for interest rate. Permanent income could be defined as the discounted sum of receipts during the planning horizon. Friedman hypothesizes that the consumption of a household is proportionate to its permanent income. Friedman referred to wealth to mean the discounted receipts of the household in any period or during the planning horizon (Ikwuagwa, Ariwa and Onyele, 2017).

3.1.4 **Modigliani and Blumberg Life Cycle Hypothesis**

Modigliani and Brumberg in their life cycle hypothesis argued that individuals formulate their expenditure plans in accordance with their expected incomes over their lifetime, that is, in line with some perception of their lifetime incomes. While making consumption decisions, individuals look at the total income to be earned over their lifetime. Modigliani, Andos "life

cycle hypothesi'' also maintained that in the long run MPC = APC. It is noteworthy that all these theories hold that average propensity to consume (APC) tends to decline as income rises (Akekere & Yousuo , 2012).

3.2 Empirical Literature

The literature reviewed showed that empirical evidences abound explaining what determine gross consumption expenditure in Nigeria. In a more recent study, Ikwuagwa, Ariwa and Onyele, (2017), estimated the determinants of aggregate consumption expenditure using ARDL estimation techniques as the variables were integrated in different order. They found out that income, interest rate and inflation had significant impact on consumption in Nigeria. Ezeji & Ajudua (2015), estimated a single equation model using the ordinary least squared estimation technique, found a positive relationship between consumption expenditure and income and proved that the Nigeria consumption function conforms to Keynesian consumption model and also found that interest rate; price level and exchange rate were significant variables explaining consumption behaviour in Nigeria. Fasoranti (2012) showed that current income, expected pension fund, shares and durable assets were positively related while expected future income and deposits in banks were negatively related to consumption. Oduh *et al.* (2012) showed that consumer confidence, current income, income expectation, expected change in the prices of food and durables, and exchange rate are the determinants of consumption expenditure in Nigeria. Akekere & Yousuo (2012) found a significant relationship between gross domestic product (a proxy of income) and private consumption expenditure. In a parallel study, Iyoha (2001) perceived consumption as a function of disposable income and lagged value of income. In another study, Adedotun (1978), showed positive correlation between consumption expenditure and per capita income. Obinna (1998) also observed that the tax relief package had potential of altering the consumption patterns in Nigeria. Uwujaren (1977) related consumption in Nigeria to Friedman's permanent income Hypothesis and showed that consumption is a function of current and permanent income. Tomori (1972) examined the determinants of household consumption using the OLS and found that monetary aggregates are a major determinants of consumption. Ajayi, Teriba and Ojo (1974) reacted to Tomori's finding, their debate centered on the choice of the most appropriate proxies. They concluded that interest rate, monetary aggregates and family size were the major determinants of consumption expenditure in Nigeria.

From the foregoing, it is evident that consumption function in Nigeria conforms to Keynesian and Milton Friedman's postulations.

4.0 Method of the study and Source of Data

The building of the model for this study takes off from the Keynesian consumption function where consumption is explained by variations in income, C= f(Y). The model is specified to embrace the finding of Milton Friedman who holds that interest rate plays important role in determining consumption expenditure. Aggregate saving was included as a control variable. The study covers the period of 1981 to 2015. The data for this study were obtained from the World Development Indicators. An error correction model was estimated using ordinary least squares estimation technique.

4.1. Specifications and Expectations

An attempt to capture the determinants of aggregate consumption expenditure in Nigeria, the model is specified as follows:

GCE= f(Y, INT, GDS)----------(1)

The above function can be specified econometrically in natural logarithm as:

$$GCE = \beta 0 + \beta 1 logY + \beta 2 logINT + \beta 3 logGDS + U$$----------(2)

Where GCE = Gross Consumption Expenditure

Y= Income (Proxy by GDP)

INT= Interest Rate

GDS= Gross Domestic Savings

U = Error term

β0>0, β1>0, β2><0, β3<0

• **Income**: GDP is taken as a proxy for income. A positive sign is expected as there exists a direct relationship between consumption and income. Consumption expenditure is expected to increase with an increase in income.

• **Interest Rate**: An increase or decrease in interest rate, may lead to a decrease or increase in consumption. The expected sign would be determined by our estimation findings.

• **Gross Domestic Savings**: This captures the effect of increase in gross domestic savings on consumption. When a consumer increases his savings, his consumption will be affected in the current year.

To carry out the data analysis, E-view7.2 application was used and the ordinary least square estimation method was employed. Due to data instability, the Augmented Dickey-Fuller test for unit root was employed to test for the stationarity of the data; this therefore, guaranteed meaningful economic results as the problem of spurious regression would be eliminated.

5.0 Estimation and Empirical Results

Table 2. Augmented Dickey-Fuller Test for Unit root

Variable	Level		1st Difference		Decision
	t-Statistics	Prob. value	t-Statistics	Prob. value	
Log(GCE)	0.4327	0.8922	-4.8676***	0.0004	I(1)
Log(GDP)	-0.3990	0.8983	-5.4837***	0.0001	I(1)
Log(INTR)	-2.8648	0.0611*	-4.2567***	0.0022	I(1)
LOG(GDS)	-0.3922	0.8986	-5.7362***	0.0001	I(1)
	t-observed 1%= -3.6394 5%= -2.9511 10%= -2.6143		t-observed 1%= -3.653730 5%= -2.957110 10%= -2.617434		

Source: Estimated by the Author

A close examination of table 2- Augmented Dickey-Fuller test for unit root, three asterisks (***) shows that the variable is 1% significant and one asterisk (*) shows that the variable is 10% significant. All the variables considered for this study were not stationary at level as none of them was at least 5% significant. The first difference of the variables shows that all the variables are integrated in order of one.

The results of the long run analysis are presented in table 3 below:

Table: 3

Dependent variable: Log(GCE)

variable	Coefficient	Std. Error	t-Statistic	Probability
Log(GDP)	1.172042	0.018649	62.2786	0.0000***
Log(INTR)	-0.028539	0.034462	-0.8281	0.4139
LOG(GDS)	-0.167622	0.018825	-8.9041	0.0001***
Constant	-0.567440	0.119573	-4.7455	0.0001

Source: Estimated by Author

R- Squared = 0.99, Adjusted R- Squared= 0.99, F-statistic= 23413, Prob.(F-statistic)= 0.0000, DW = 2.141898

Diagnosis Test:

Table 4- Augmented Dickey-Fuller Test for unit root of the Residual series

Variable	t- Obs. value	t-statistic cal.	Prob. Value
RESID	1% = -3.6394 5% = -2.9511 10% = -2.6143	-4.976750	0.0004***

A close examination of table 4- Augmented Dickey-Fuller test for unit root, three asterisks (***) shows that the variable is 1% significant. The Augmented Dickey-Fuller unit root test of the residual series proved that the residuals were stationary at level. This shows that there is a long

run relationship among the variables considered for the study. As a result, we proceeded to estimate an error correction model (ECM).

The results of the short run analysis are presented in table 5 below:

Table 5

Dependent variable: D(Log(GCE))

Variable	Coefficient	Std. Error	t-statistic	Prob.
D(log(GCE(-1)))	-0.1148	0.215825	-0.532314	0.5994
D(log(GDP))	1.183753	0.07025	16.85034	0.0001***
D(log(GDP(-1)))	0.232000	0.229712	1.009961	0.3226
D(log(INTR))	-0.062285	0.072286	-0.86942	0.3932
D(log(INTR(-1)))	-0.013974	0.070252	-0.19891	0.8440
D(log(GDS))	-0.172697	0.018722	-9.52955	0.0001***
D(log(GDS(-1)))	-0.050903	0.034556	-1.47306	0.1537
ECM(-1)	-0.987114	0.311438	-3.169530	0.0047***
Constant	-0.014155	0.020797	-0.680630	0.5026

Source: Estimated by the Author

For table 5, three asterisks (***) shows that the variable is 1% significant. R-squared = 0.93, Adjusted R-Squared = 0.90, F= 38.46, Prob.(F-statistic) = 0.0000

6.0. Empirical Outcomes

The results of the Augmented Dickey-Fuller test for unit root of the variables considered for this study proved that all the variables were integrated in order of one. The long run estimation results show that there exists a positive relationship between gross consumption expenditure and income (proxy by GDP) and a negative relationship between gross consumption expenditure, interest rate and gross domestic savings. The Augmented Dickey Fuller test for the presence of unit root in the residual series proved the existence of stationarity; which show that there is a long run relationship (cointegration) among the variables considered for the study.

The short run estimation (ECM) results show that a positive relationship exists between gross consumption expenditure and income. This result is in support of the Keynesian absolute income hypothesis. The result also shows a negative relationship between gross consumption expenditure, interest rate and gross domestic savings. In accordance with reviewed literature, it is supposed both long and short run expected coefficients of independent variables are significant.

The above estimated model clears serial correlation and unit root test. In table 5, the term (ECM(-1)) symbolizes error correction term and signifies short-run correction processes for the long term stability path. If the error correction term lies between 0 and -1, it signifies that the adjustment of gross consumption expenditure in the present period is equal to a portion of the earlier period's error. A bigger error correction term- ECM(-1), shows a faster adjustment speed toward stability path. For table 5, about 98 percent of disequilibrium in the present time will be corrected in the next time period (annually). The error correction term (ECM (-1)), fulfills our expectation as it is negatively signed, less than unity and statistically significant.

The estimated coefficients of the independent variables show the expected signs and two (income and gross domestic savings) out of the three explanatory variables are statistically significant. The relevant independent variables have substantial outcomes in both the long and short run term.

7.0 **CONCLUSION, POLICY IMPLICATIONS AND RECOMMENDATIONS**

This study estimates the long and short run coefficients of Nigerian's consumption function and relevant macroeconomic variables employing data span from 1981 -2015. Employing annual data provided by the World Development Indicators, different exogenous variables especially national income proxy with GDP, interest rate and gross domestic savings are employed.

The existence of long run relationship between aggregate consumption function and domestic variables through Engel and Granger cointegration testing is established. The long run estimation reveals that national income will significantly impact aggregate consumption expenditure directly while gross domestic saving will significantly impact aggregate consumption expenditure inversely. Both the short run and long run estimates confirm that national income

and gross domestic savings are the main determinants of aggregate consumption function in Nigeria. The policy implication of the findings is that enhanced income will have significant positive impact on aggregate consumption expenditure in Nigeria.

Based on the above findings, the following policies were recommended. The employers of labour should endeavor to increase the workers' salaries periodically in line with the changes in the country's macroeconomic and microeconomic variables. It is only when salaries are increased in line with the prevailing economic situations in the country that consumers can improve on their consumption expenditure through increase in their disposable income. Policies which reduce tax should also be formulated to enhance consumers' disposable income. The Nigerian government should make amiable efforts to provide infrastructures, security and enabling environment for business to strive as good performance of business in the country will improve the returns on investment and finally impact positively on aggregate consumption expenditure. This suggests that government of the states should adopt policies targeted towards development of rural areas through provision of amenities, recreational facilities, schools, sound equipped hospitals and other necessary infrastructures as this will impact immensely on the aggregate consumption expenditure in Nigeria.

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