

Determinants of Aggregate Consumption Expenditure in Nigeria

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Abstract

The study examined the determinants of aggregate consumption expenditure in Nigerian. The model used in the study was derived from the Keynesian consumption function where consumption is explained by variations in income, $C = f(Y)$. It was also specified to embrace the postulates of consumption expenditure that are not based on current income alone, but on other explanatory variables. Thus gross consumption expenditure was the dependent variable while income, interest rate, inflation rate and exchange rate were the explanatory variables. Unit root test using the Augmented Dickey Fuller test was conducted to test for stationarity among variables employed. The Johansen Co-integration test was also employed to test for long run equilibrium relationship among the variables. The study showed positive relationship between consumption expenditure and income and proved that the Nigeria consumption function conforms to Keynesian consumption model and also incorporates the idea of other well known theories as, interest rate; price level and exchange rate were significant variables explaining consumption behaviour in Nigeria. Policies to combat inflation, employment creation to increase purchasing power in the hands of more Nigerians and a check on the continuous depreciation of the naira were suggested recommendations.

1. Introduction

Among several key macroeconomic variables that determine aggregate output, aggregate consumption appears to be an output determining variable that has attracted a lot of attentions and studies. As one of the fundamental components of GNP & GDP and a major variable for measuring economic growth, consumption expenditure and the nature of the consumption function have engaged much of the macroeconomic debate dating back to John Stuart Mills and the classical economists of the 18th & 19th centuries, J.M. Keynes, Milton Friedman, Ando Modigliani, James Duesenberry, Simon Kuznet etc in the early to mid 19th century. This is so because consumption expenditure accounts for about $\frac{2}{3}$ of aggregate expenditure in virtually all economies (Branson, 1989).

Consumption according to Dernburg (1985), is the act of using goods and services for the purpose of satisfying man's innumerable needs. This encompasses the importance of consumption in welfare. The aggregate consumption expenditure level which includes expenditure on durable and non-durable goods shows the general position of an economy.

Neoclassical economist (mainstream) generally consider consumption to be the final purpose of economic activity and thus, the level of consumption per person is viewed as a central measure of an economy's productive success.

The study of consumption behavior plays a central role in both macroeconomics and microeconomics. Macroeconomists are interested in aggregate consumption for two reasons. First aggregate consumption determines aggregate saving because aggregate saving defined as the portion of income not consumed, flows through the financial system to create the national supply of capital. It follows that the aggregate consumption and saving behavior has a powerful influence on economy's long term productive capacity. Second, since consumption expenditure account for most of national output, understanding the dynamic of aggregate consumption expenditure is essential to understanding macroeconomic fluctuation and the business cycle.

Microeconomists have studies consumption behavior for many reasons such as using consumption data to measure poverty, to examine the households preparedness for retirement or to test theories of competition in retail industries. A rich variety of household level data sources such as the consumer expenditure survey conducted by the US government allows economist to examine household spending behavior in minute detail, which has also been utilized to examine interactions between consumption and other economic behavior such as job seeking or educational attainment.

From the foregoing, it is important to point out that both the government and household sectors of the economy engage in consumption expenditure. The determinants of consumption expenditure has influenced economist like Friedman (1957), Modigliani (1963), Keynes (1936), Duesenberry (1949) etc, to study factors both quantitative and qualitative such as income, wealth, interest rate, capital gain, liquid assets etc, that can influence consumption, as whatever influences consumption expenditure, plays a major role in the process of economic growth in every economy. (Branson, 1989).

Consumption decision and behaviour is crucial for both short run and long run analysis because of its

role in determining aggregate output. In Nigeria, consumption expenditure has been increasing with GDP. In 1980, GDP at current market price was valued at N50,846.6 million with consumption expenditure accounting for about 71.2% of it, standing at N36,746.1 million. (CBN, 2006). As GDP increased to N143,623.9 million, N497,351.3 million, N2,991,991.8 million, N11,673,602.2 and 40,544,099.94 in 1986, 1990, 1995, 2004 and 2012, consumption expenditure increased from N63,422.6 million, N180,777.9 million, N1,640,388.2 million and 24,388,865.77 respectively. (CBN, 2012).

Changes in consumption go hand in hand with economic growth. A change in consumption will have a multiplier effect on the level of national income brought about by the working of the multiplier. As a key macroeconomic aggregate, its importance cannot be overemphasized. A comprehensive study of its determinants could help an economy achieve economic stability, high level of employment of factors of production and high aggregate income.

This study, therefore, aims at finding out the key macroeconomic variables that determine aggregate consumption expenditure in Nigeria from 1986 to 2012.

2. Conceptual Framework

2.1. Theoretical Framework

The theory underpinning this study stems from the nature and relationship between consumption and income. The most undeniable attention to what has come to be called the consumption function was first well thought out by J.M. Keynes.

Keynes in his book "The General Theory of Employment, Interest and Money" published in 1936 laid the foundation of modern consumption theories. Keynes mentioned several subjective and objective factors which determine the consumption of a society. However, of all factors, he posited that the level of income determines the consumption of an individual and the society. He laid stress on the absolute income of an individual as the major determinant of consumption and as such, his theory was regarded as the absolute income hypothesis. His theory centered on the relationship between the MPC and APC.

Further, Keynes put forth the fundamental "psychological law of consumption" according to which he propounded that as income increases, consumption increases, though not by as much as the increase in income. In other words, the marginal propensity to consume is less than 1, $0 < MPC < 1$ (Thomas, 1995).

Keynes made 3 salient points from his proposition. First, consumption expenditure depends mainly on absolute income of the current period. Secondly, consumption is a positive function of absolute level of current income and thirdly, the more income derived, the more the consumption expenditure in that period (Jhingan, 2002).

Keynes posited that interest rate does not have an important role in influencing consumption decision. This stood in stark contrast to the classical economist who believed that a higher interest rate encourages savings and discourages consumption (Blare, 1978)

Based on conjectures, Keynesian consumption function is given as $C = a + bY_d$, $a > 0$, where C is the consumption, Y_d is disposable income, a is consumption when income is zero (autonomous consumption) and b is the rate of change of consumption due to change in income called the marginal propensity to consume (MPC). While this theory has success modeling consumption in the short run, attempt to apply this model over a longer time frame proved less successful. This led to the emergence of other consumption theories put forth by several economists based on other key factors which is believed to determine consumption other than income.

Duesenberry (1946) in his relative income hypothesis rejected the fundamental assumption of consumption theory of Keynes. He challenged the assumption of the independence of individual's consumption and postulated interdependence in consumption behaviour. He posited that consumption behaviour is not independent but interdependent on the behaviour of every other individual. He explained that people do not only derive satisfaction from consumption but also from how the consumption compares with that of others. (Ahuja, 2013).

As such, the relative size of a household income to that of other households determines consumption level. The hypothesis is based on two relative aspects

- A household's income position relative to its associates or group to which it belong.
- A household's present income relative to its previous incomes.

By this, he posited that households strive constantly toward a higher consumption level and emulate the consumption pattern of a neighbour. (Ohale, 2002).

If income of all individuals/household increases by the same percentage, then relative income would remain the same despite the increase in absolute income. Since the relative income remains the same, the same proportion of income would still be spent on consumption, APC will thus, remain the same. If income should fall, consumption expenditure does not fall much as households try to maintain previously attained consumption level which they are accustomed to. This is often called the "Ratchet Effect". (Ahuja, 2013).

Friedman (1957) proposed the permanent income hypothesis to explain the stylized factors for which

Keynes absolute income hypothesis didn't give account. Friedman emphasized that consumers smooth their expenditure by borrowing and lending. He posited that consumption is determined by long term expected income rather than current level of income. He argued that consumption in one day is determined not by income received on that day but on the average daily income received for a period. (Anyanwu, 1993). Income consist of a permanent (anticipated and planned) component and a transitory (windfall gain/unexpected) component. Friedman noted that permanent income or expected long average income is earned from both human and non human wealth consisting of labour income, saved money, debentures, equity shares, real estate and consumer durables (cars, refrigerators, air conditioner, TV sets etc). This theory made an important contribution by laying stress on changes in interest rate and wealth and the desire to add to one's wealth (Forgha, 2008).

In 1950, Franco Modigliani and his fellow scholars propounded the Life Cycle Hypothesis. They posited that consumption depends on a person's lifetime income. Modigliani emphasized that income varies systematically over people's lives and savings allows consumers to move income from the time in life when income is high to low income lifetime period in order to smoothen consumption (Gali, 1994).

The life cycle hypothesis is based on household utility maximizing behaviour defined on present and future consumption subject to a lifetime resources constraint. It assumes that price is constant, interest rate is stable and consumers do not inherit any asset and as such the wealth owned by a consumer are his own. It also indicates that consumption in a period depends on the total resources (wealth) one has to spend over his remaining lifetime which composes of initial wealth and expected earnings at late stage in life (Onuchuku, 1998).

2.2. Empirical Framework

Study by Adedotun (1978) showed positive correlation between consumption expenditure and per capita income.

In a more recent study Akekere and Yousuo (2012), investigated the impact of change in gross domestic product (income) on private consumption expenditure in Nigeria over the period 1981 to 2010. Using the OLS simple regression analysis they showed a positive and significant impact of Gross Domestic Product (income) on Private Consumption Expenditure. The unit root test (order of stationary) also showed non existence of unit root at the level form of the variables.

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 determinant 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 aggregate and family size were major determinants of consumption expenditure in Nigeria. Obinna (1998) also observed that the tax relief package had gone a long way in altering the consumption patterns of Nigeria.

3. Method of Study

This study follows the methodology of econometric research in recent times. Our model is derived from the Keynesian consumption function where consumption is explained by variations in income, $C = f(Y)$.

The model is specified to embrace the postulates of consumption expenditure that are not based on current income alone, but on other explanatory variables. The study cover the period 1986 - 2012

3.1. Specifications and Expectations

In order to capture the determinant of aggregate consumption expenditure in Nigeria, the model is specified as

$$GCE = f(Y, INT, INF, EXR)$$

Where GCE = Gross Consumption Expenditure

Y = Income (Proxied by GDP)

INT = Interest Rate

INF = Inflation Rate

EXR = Foreign Exchange Rate

Thus, $GCE = \beta_0 + \beta_1 GDP + \beta_2 INT + \beta_3 INF + \beta_4 EXR + \mu$

$$\beta_0 > 0, \beta_1 > 0, \beta_2 > < 0, \beta_3 < 0, \beta_4 < 0$$

- **Income:** We use GDP as a proxy for income. A positive sign is expected as there exist a direct relationship between consumption and income. Consumption expenditure is expected to increase with an increase in income.
- **Interest Rate:** An increase in interest rate, may lead to a decrease or increase in consumption. As such, the expected sign would be determined by our finding
- **Inflation Rate:** This tries to capture the effect of increase in price level on consumption. When there is inflation (general price level increase), the real value of the consumer's cash balance is falls. As such

their purchasing power is hampered, leading to a fall in consumption expenditure. Thus an inverse relationship is expected to exist between inflation and consumption.

- **Exchange Rate:** We attempt to capture how households react to changes in price of foreign goods by including exchange rate of naira to dollar in our model. This stems from the fact that about 65% of consumer goods in Nigeria are made of imported foreign goods which include food items, services, automobiles, etc (NBS, 2013). As exchange rate falls (i.e. as the price of dollar rises), consumption expenditure falls. This is so because the naira loses value and depreciates and more naira would be needed to buy a dollar unit of foreign goods. Thus there should exist an inverse or negative relationship between exchange rate and consumption expenditure.

To estimate our results, we would employ the ordinary least square method of estimation to check for variables that determine consumption. Due to data instability arising from the instability in the Nigeria's economic terrain accompanied by frequent policy changes, that are political, social, economic and the high level of corruption, there is need to difference the time series data so as to separate the non-economic occurrences from pure economic occurrences as induced by economic policies. This therefore, guarantees meaningful economic results as the problem of spurious correlation are going to be eliminated. The order of integration to ascertain the number of times a variable will be differentiated to arrive at stationary results using the Augmented Dickey-Fuller (ADF) tests would be employed to test the stationarity of variables for estimation. (Onuchuku, 1999).

4. Analysis of Result

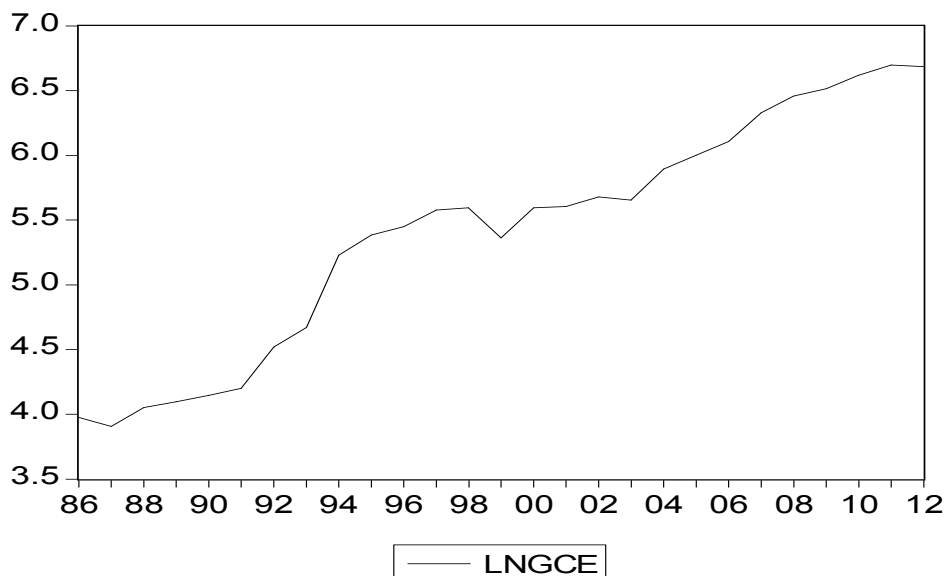
$$\ln gce = \alpha_0 + \alpha_1 \ln r gdp + \alpha_2 \ln int + \alpha_3 \ln inf + \alpha_4 \ln exr + \mu$$

$$\ln gce = 8.524784 + 1.397 \ln r gdp - 1.561 \ln int + 0.121 \ln inf - 0.741 \ln exr$$

$$R^2 = 0.94$$

$$\text{Adjusted } R^2 = 0.93$$

Graphical illustration of Gross Consumption Expenditure 1986 – 2012



The chart showed that consumption expenditure maintained an increasing trend over the period 1986 to 2012. This can be attributed to the Structural Adjustment Programme and other policies with little variations due to temporary shocks in income resulting from economic disturbances such as high inflation rate observed in the economy. Between 1993 and 2003, the Nigeria consumption profile showed a high increase, this may be attributed to huge military spending by the military administration between 1993 and 1999, and government huge spending in preparation for democratic rule in 1999. After 2006, consumption expenditure has been stable and growing at a declining rate. This could stem from programmes that the government embarked upon so as to curtail its spending and that of the household, such as the 25 billion naira capital base for commercial banks that was initiated. Such reforms coupled with selling of shares that yielded high return led households to invest in such reforms thereby having little to spend on current consumption. This reason holds true for rational beings that utilizes opportunity to invest when the yield is high rather than keeping their money idle for transaction purposes.

The analysis shows that all parameter are rightly signed. The coefficient of $\ln r gdp$ shows a positive relationship between consumption and Income. The coefficient is the marginal propensity to consume and it

measures the percentage change. Holding other variables constant, a percentage change in rgdp, leads to about 1.397 % increase in consumption expenditure in Nigeria. Its size did not conform to expectation as it states that $0 < MPC < 1$. MPC in Nigeria is greater than unit suggesting that vast number of household exhaust all their income on consumption and even borrow to consume. That aspect of borrowing is the factor possibly causing MPC to be greater than unit.

The adjusted R² which takes into account the degree of freedom when new regressors are introduced shows that 93% variation in consumption expenditure is determined by the explanatory variable. The t tests are all significant except that of inflation rate

4.1. Unit Root Test

The Augmented Dickey Fuller test in the table above shows that LNGCE, LNRGDP achieved stationarity at second differencing while LNINT, LNINF, LNEXR were stationary at first differencing at 5% critical value.

Table 4.1: Augmented Dickey-Fuller Test

	T-Statistic	Critical Value 1%	Critical Value 5%	Critical Value 10%	Prob.	Order of Integration
D(LNGCE)	-5.164336	-3.7497	-2.9969	-2.6381	0.000000	I(2)
D(LNRGDP)	-4.170255	-3.7497	-2.9969	-2.6381	0.000001	I(2)
D(LNINT)	-4.704388	-3.7343	-2.9907	-2.6348	0.000001	I(1)
D(LNINF)	-3.330327	-3.7204	-2.9850	-2.6318	0.010034	I(1)
D(LNEXR)	-3.731247	-3.7343	-2.9907	-2.6348	0.000316	I(1)

4.2. Co-integration Analysis

Table 4.2: Johansen Co-integration Test

Sample: 1986 2012

Included observations: 25

Test assumption Linear deterministic trend in the data

Series: LNGCE LNRGDP LNINT LNINF LNEXR

Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.794065	105.4309	68.52	76.07	None **
0.718795	65.92611	47.21	54.46	At most 1 **
0.537814	34.20937	29.68	35.65	At most 2 *
0.439801	14.91467	15.41	20.04	At most 3
0.016978	0.428093	3.76	6.65	At most 4

*(**) denotes rejection of the hypothesis at 5%(1%) significance level

L.R. test indicates 3 co integrating equation(s) at 5% significance level

The Johansen co-integration analysis was used to determine if there exists a long-run equilibrium relationship among variables under study. It revealed that 3 variables are co-integrated at 5% critical value. The likelihood ratio of 105.4309, 65.92611 & 34.20937 are all greater than the critical value of 68.52, 47.21 & 29.68. We therefore reject the null hypothesis and conclude that there exist at least one co-integrating relationship and as such, long run equilibrium exists among the variables.

5. Conclusion

The study proved that the Nigeria consumption function conforms to Keynesian consumption model and also incorporates the idea of other well known theories. Our finding reveals a positive relationship between consumption expenditure and income. Similarly, interest rate, price level and exchange rate were significant variables explaining consumption behaviour in Nigeria.

As seen, a high aggregate consumption expenditure of households tends to have a multiplier effect on output of the economy. This is so because as consumption increases, expenditure on goods and services increases as well. This automatically implies an expected increase in the factors of production so as to meet up with the demand of consumers. Idle resources are employed and economic growth is expected.

Aggregate consumption expenditure is therefore a key variable to be considered for long term policies due to its relationship with economic growth. Policy measures such as the following is necessary and recommended

- Policies to combat inflation so as to increase the real value of consumer's income should be targeted, as

this would boost consumption

- Employment creation is important as it puts more purchasing power in the hands of more Nigerians who ultimately spend them on consumable goods and services.
- The continuous depreciation of the naira should be checked as this negatively affects aggregate consumption expenditure in Nigeria

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