



Government Expenditure and Economic Discomfort in Nigeria: An ARDL Approach

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<https://riopenjournals.com/index.php/finance-economics-review/index>

Doi: <https://doi.org/10.38157/finance-economics-review.v2i1.89>

Citation: Obayori, J.B. (2020). Government Expenditure and Economic Discomfort in Nigeria: An ARDL Approach. *Finance & Economics Review*, 2(2), 1-12. Doi: <https://doi.org/10.38157/finance-economics-review.v2i1.89>

Research Article

Abstract

Purpose: Government expenditure affects the behavior of both producers and consumers, and influence the distribution of income and wealth in the economy. But, a cursory look at government expenditure (recurrent and capital) in Nigeria over the year, showed that expenditure has been on the increase but the rate of increase has not translated into economic comfort (reduction in poverty and unemployment rates). Due to this assumption, this paper examined government expenditure and economic discomfort in Nigeria.

Methods: Annual time-series data from 1990-2018 were obtained from the CBN Statistical Bulletin (various issues) and the World Bank report. The descriptive statistics, ADF unit root test, and ARDL model serves as the analytical tools.

Results: Based on the empirical result, the paper concluded that government capital expenditure has a negative and significant relationship with economic discomfort. On the other hand, government recurrent expenditure is positively and insignificantly related to economic discomfort.

Implications: This result implies that while the increase in capital expenditure will depress economic discomfort, an increase in the recurrent component of the expenditure will not help to reduce economic discomfort. Based on these conclusions, the paper recommended amongst others that more government capital spending should be encouraged as it plays a critical role in reducing both poverty and unemployment rates in Nigeria.

Key Words: ARDL approach, Discomfort, Economic, Expenditure, Poverty, Nigeria

1. Introduction

Fiscal policy is one of the foremost macroeconomic policies in any country of the world to combat economic discomfort; that is reduction in both unemployment and poverty rates to the beeriest minimum in order to sustained growth and development. Thus, fiscal policy involved the use of government direct and indirect taxes and expenditures to affect the level of economic

activities in an economy (Obayori, 2016). One of the major mechanisms of fiscal policy for achieving this is government expenditure. Therefore, government expenditure as a third component of aggregate demand embraces all spending at each level of government-federal, state, and local governments to meet the goal of stable long-run growth, economic efficiency, and poverty reduction. Thus, government expenditure affects the behavior of both producers and consumers and influence the distribution of income and wealth in the economy (Gbanardo, 2007).

Meanwhile, government expenditure can be classified into both capital and recurrent expenditures. The capital expenditure refers to all government expenses on infrastructures for providing social and economic services such as building new factories, roads, schools, bridges, hospitals, etc. on the other hand, recurrent expenditure refers to all day to day running costs of government on the maintenance of existing or new institution and services. This includes the costs on salaries and wages of public servants as well as fringe benefits and other expenses for servicing activities such as administration, defense, and other social services like education, health, and pension schemes. Over the year, a cursory look at government expenditure (recurrent and capital) in Nigeria showed that it has been on the increase. For instance, in 1990 total government expenditure stood at N36243.65million. It increases to N701.05 billion, N3993.37billion, and N4842.6billion in 2000, 2010, and 2018 respectively (CBN, various issues). In response, the discomfort index (the sum of unemployment and poverty rates) stood at 49.3% and increase to 83.5%, in 2000. In the year 2010, it stood at 72.7% and increase to 81.38% in 2018 (World Bank, 2018). See appendix 1 for detailed reports.

Despite the rising trend in government expenditure in Nigeria, it is absurd and bothersome to note that social and macroeconomic indicators have shown depressing pictures. The rate of economic growth with an average growth of 6.4 percent between 2000 and 2014 has reduced to as low as -0.8 % between the last quarter of 2015 and 2016. Also, in 2017 and 2018 it was less than 2% and about 2.28 in the third quarter of 2019 (NBS report, 2019). In response, the rate of unemployment has been on the increase (rising from 1.8 percent in 1995 to 23.9 percent in 2011 and 20.3 in 2017 (CBN, 2018). That was why Udeorah, Obayori, and Krokeyi (2017) as well as Gbosi (2019) claimed that the employment rate has been very low and this makes the unemployment rate increase over the years and the persistence increase in unemployment increased poverty level. Also, statistics showed that poverty has been on the increase over the year. For example, poverty increased from 27 percent in 1980 to 46 percent in 1985; it then increased very suddenly to 67 percent in 1996 and over 70 percent in 1999 (Obayori, Udeorah & Aborh, 2018). Thus, about 66 million of the Nigerians population lack access to potable water (WHO/UNICEF cited in Okapi, 2012; World Bank, 2012); the mortality rate was put at about 630 deaths/100,000 live births (World Bank, 2018). The above illustrations reveal a miserable state of poverty rate, which indubitably has also been on the increase over the year. Meanwhile, there has been an attempt to solve the case of economic discomfort occasioned by unemployment and poverty in Nigeria. For, instance, there was the introduction of the national directorate of employment program which aimed at creating jobs for the youths, thereby reducing the incidence of unemployment and poverty in the country. Despite the creditable efforts of

government at addressing the problem of economic discomfort brought about by rising unemployment and poverty, the problems still remain in Nigeria.

The illogical situation in Nigeria between rising government expenditure and social-economic indicators (especially unemployment rate and poverty rate) makes it unclear on the exact relationship between government expenditure and the unemployment rate as well as poverty rate (economic discomfort). Although, empirical evidence on this issue has produced inconclusive results (Holden and Sparrman, 2013). Instead of the above, the paper examined government expenditure and economic discomfort in Nigeria. The rest parts of the paper discussed literature review, methodology, results, and concluding remark.

2. Literature Review

2.1 Poverty and Unemployment Theories

Some schools of thought postulated that poverty is a function of nature. Thus, they came up with the natural-circumstantial theory of poverty. This theory averred that poverty could be caused by natural factors such as geographical location, the natural endowment of the individual's environment, unemployment, and old age, and so on (Akeredolu-Ale, 2005). Thus, to reduce poverty in such circumstances, the individual needs to work hard and cope with the prevailing circumstance without changes in the larger economic, social and political environment (Kakain & Obayori, 2018). On the other hand, Boye (1999), affirms that the power theory of poverty is regarded as a feature of any situation in which the few possesses some political power to organize the economic system in their own interest. Thus, poverty will remain prevalent as long as there is no effective pressure from the majority poor to restructures the distribution of political power in society in favor of all. Akeredolu-Ale (2005) agreed with the power theory of poverty that explains the paradoxical situation in a country like Nigeria that is rich, but yet the major portion of the populace is poor. Thus, the poor masses can gain power from the few rich through revolution. But, the power theory of poverty was criticized on the ground that even if there are revolutionary responses within the vast majority of the population to overthrow the political structure in the society in question, such an incident cannot be possible in the short run.

Meanwhile, Keynes (1939) in his thesis 'General Theory of Employment, Interest and Money' postulated that the dynamic government intervention in the market place through government expenditure was the main approach for guaranteeing full employment by guaranteeing proficiency in resource allocation and regulation of markets. Keynes's theory posited that public expenditure through investment stimulates the economy, decreases unemployment, and makes family units feel wealthier (Ojong & Hycenth, 2013; Obayori & Robinson, 2019). The hypothesis additionally holds that administration can switch financial downturns by acquiring cash from the private sector and restoring the cash to the private sector through diverse expenditures.

2.2 Empirical Review on Government Expenditure and Economic Discomfort

Mehmood and Sadiq (2010) examined the relationship between government expenditure and the poverty rate in Pakistan from 1976 to 2010. Utilizing an error correction modeling technique,

the study observed a negative relationship between government expenditure and poverty rate. Olofin (2012) examined the effects of defense spending on poverty reduction in Nigeria from 1990 to 2010 with the use of the Dynamic Ordinary Least Square technique. The findings showed that military participation rate, military expenditure per soldier, and population were statistically significant and positively related to the poverty index while trade and output per capita do not positively impact on poverty index. Danjuma and Bala (2012) explored the role of governance in employment generation in Nigeria. The study employed primary data obtained through the use of interviews. The findings showed that the unemployment rate in Nigeria had created tension and hatred between the rich and the poor which in turn led to other crises like the Boko Haram, Niger Delta militant, armed robbery, and child trafficking. Also, Holden and Sparrman (2013) examined the effect of government purchases on unemployment in 20 OECD countries for the period 1980 to 2007. The study observed that an increase in government purchases reduced unemployment, particularly in downturns than in booms as well as a fixed exchange rate regime than a floating regime.

Okulegu (2013) used OLS to examine the effect of government spending in agriculture on poverty reduction in Nigeria from 1980 to 2009. The study observed that government spending had a significant effect on poverty reduction in Nigeria. Nazar and Mahmoud (2013) used the ARDL model to examine the relationship between government spending and the poverty rate in Sistan and Baluchestan Province of Iran from 1978 to 2008. The study observed that constructive expenditures have a positive effect on poverty reduction while current expenditure of government had a negative effect on poverty reduction. Ozoana (2013) analyzed the impact of public spending on poverty eradication in Nigeria from 1980-2011 with the use of multiple regression analysis. The findings showed that government expenditure on health, education, and transport and communication are insignificant and a unit increase of government expenditure in these sectors will reduce the poverty level. But that of agriculture and water resources, and housing and environment are significant and a unit increase will increase the poverty level.

Philip (2014) used OLS to examine the impact of government expenditure on unemployment and poverty rates in Nigeria for the period 1981 to 2011. The study observes that government expenditure has a positive and significant impact on the unemployment rate while it has a negative and insignificant impact on the poverty rate. Obayori (2016) investigated fiscal policy and unemployment in Nigeria. The paper utilized cointegration and ECM methods. The parsimonious ECM result revealed that the two independent variables (Government Capital and Recurrent Expenditure) have both a negative and significant relationship with unemployment in Nigeria. Kakain and Obayori (2018) examined the implication of poverty on health status in Nigeria. Secondary data from World Bank data banks were collected on the poverty gap, life expectancy, and infant mortality rate. The study used co-integration and Granger causality tests to analyze the collected data. The results of the Pairwise Granger causality test result showed that poverty affects both life expectancy and infant mortality rate. The paper concluded that there is a high rate of poverty in the Nigerian economy and this

variably will have a negative effect on the health status which will in the long run affect economic growth.

Obayori and Robinson (2019) examined a comparative analysis of the effect of government spending in selected sectors on job creation in Nigeria from 1981 to 2018. The ECM method was used for the analysis. The results of the parsimonious error correction model showed that the coefficients of capital spending in the agricultural, education, and health sectors were positively signed and significant with job creation. The coefficient of government recurrent expenditure in the agricultural sector is negatively signed and statistically not significant with job creation at a 5 percent level. Also, the coefficient of government recurrent expenditure in the education sector is positively signed and statistically significant with job creation at a 5 percent level. Government recurrent expenditure in the health sector is positively signed but statistically not significant with job creation at a 5 percent level.

3. Methodology

Annual time-series data from 1990-2018 were obtained from the CBN Statistical Bulletin (various issues) and the World Bank report. The econometric method of ARDL was the main technique of analysis. Economic discomfort was measured by the summation of poverty and unemployment rates, while government expenditure was measured by disaggregating total expenditure into capital and recurrent expenditures. Meanwhile, both the descriptive statistics and the stationarity test preceded the ARDL technique in order to establish both the characteristics and stability of the sample data.

3.1. Model Specification

In order to put the variables on the same scale, the log-linear formulations of the long run ARDL model was estimated as follows:

$$\begin{aligned} \Delta DC Ft = & \alpha_0 + \alpha_1 DC Ft + \alpha_2 \ln GC X t + \alpha_3 \ln GR X t + \sum_{i=1}^n + \Delta a_{11} DC Ft - 1 + \sum_{i=1}^n \Delta a_{2i} \ln GC X t - 1 \\ & + \sum_{i=1}^n \Delta a_{3i} \ln GR X t - 1 + \mu t \end{aligned} \quad (1)$$

Meanwhile, the ECM which determine the short-run model was carried out in equation (2) as stated below;

$$\begin{aligned} \Delta DC Ft = & \alpha_0 + \alpha_1 DC Ft + \alpha_2 \ln GC X t + \alpha_3 \ln GR X t + \sum_{i=1}^n \Delta a_{11} DC Ft - 1 + \sum_{i=1}^n \Delta a_{2i} \ln GC X t - 1 \\ & + \sum_{i=1}^n \Delta a_{3i} \ln GR X t - 1 + \Omega ECM + \mu t \end{aligned} \quad (2)$$

Where; DCF is Discomfort Index, GCX is Government capital expenditure, GRX is Government recurrent expenditure, μ is error term, $\alpha_0, \alpha_1 - \alpha_3$ is the estimate parameters, t is time lag, \ln is Log is logarithm to base ten and Ω is the coefficient of ECM.

4. Results and Discussion

4.1 Pre-Estimation Test

This comprises the descriptive statistics to evaluate the trend and the nature of the variables. Also, the unit root test helps to ensure the stationarity of the variables.

Table 1: Descriptive Statistics for Variables

Measurements	DCF	GCX	GRX
Mean	74.06586	528.0107	49549.33
Std. Dev.	10.35587	367.5356	94897.83
Skewness	-1.085230	0.104414	2.853373
Kurtosis	3.615552	1.579208	11.98043
Jarque-Bera	6.150176	2.491896	136.8015
Probability	0.046186	0.287668	0.000000
Observations	29	29	29

Source: Authors' Computation from E-view 10

The descriptive statistics reported in Table I indicated that economic discomfort (DCF) has an approximate mean of ₦74.06million with the corresponding standard deviation of ₦10.35million. Similarly, government capital expenditure (GCX) has an approximate mean of ₦528.01million with the corresponding standard deviation of ₦367.53million. Government recurrent expenditure (GRX) has an approximate mean of ₦49549.3million with the corresponding standard deviation of ₦94897.8mbillion. The skewness test showed that only two of the variables (GCX and GRX) have positive values; meaning that they are positively sloped while, discomfort index (DCF) has a negative value, which denotes a negative slope. The probability of Jarque-Bera statistics showed that the null hypothesis of the variables; DCF and GRX, (discomfort index and government recurrent expenditure) were rejected. Thus, the variables were normally distributed. But the null hypothesis of government capital expenditure was accepted. Thus, the variable was not normally distributed. More so, the kurtosis test showed that all the series have a large tail. In sum, the results of the descriptive statistics showed that the distributions are higher than normal. This may have resulted from the problem of trended data. Thus, the stationarity test was conducted to stabilize the series before further estimation.

The ADF unit root test of stationarity result presented above showed that both discomfort index and government recurrent expenditure were stationary at order zero (at level). The non-stationary variable, which is government capital expenditure was differenced once and it became stationary at the first difference before estimations of the ARDL to prevent false regressions results and arrived at a result which was data admissible, theory consistent and interpretable.

Table 2: Result of Augmented Dickey-Fuller Unit Root Test at Level and First Difference

Variable s	ADF @ Level	5% Critical Value	Decision	ADF @ 1 st Diff	5% Critical Value	Decision
DCF	-2.9944	-2.9718	Stationary I(0)			1(0)
GCR	-3.2109	-2.9718	Stationary I(0)		1(0)	
GRC	-1.2603	-2.9918	Not stationary	-6.8981	-2.9762	Stationary I(I)

Source: Authors' Computation from E-view 10

4.2 The ARDL Model Results

This section examined both short-run and long-run tests in order to validate economic theory/theories.

Table 3 ARDL Bounds Test for Co-integration Model

Model		F-Statistic = 6.2577	
(DCF,GCX, GRX)		K = 2	
Critical Values	Lower Bound	Upper Bound	
10%	3.17	4.14	
5%	3.79	4.85	
1%	5.15	6.16	

Source: Authors' Computation from E-view 10

The ARDL bound test result presented in Table 3 obviously showed that there is a long-run relationship amongst the variables (DCF, GCX, and GRX). This is because the computed F-statistic of about 6.26 is higher than the upper critical bounds of 4.48 at 5% critical value. Therefore, the null hypothesis of no co-integration at a 5% significance level for the model was rejected. Thus, there is a long-run association amongst the variables. It is therefore evident that the independent variables (government capital and recurrent expenditures) can move together with the dependent variable (economic discomfort) to bring about a reduction in both poverty and unemployment in Nigeria.

Table 4. Estimated ARDL for Long Run Coefficients of the Model

Regressors	Coefficient	t-Statistic	P-Value
GCX	6.1244	3.2933	0.0032
GRX	0.5864	5.4409	0.00132
C	17.4510	2.0000	0.00574

Source: Authors' Computation from E-view 10

The estimated ARDL long-run coefficients of both government capital and recurrent expenditures (GCX and GRX) all have a positive and significant relationship with economic discomfort. Thus, there is a long-run equilibrium relationship between government expenditure and economic discomfort in Nigeria during the period under review. Following the establishment of a long-run co-integration relationship among the variables, the long-run and short-run dynamic parameters for the variables were obtained in the next table.

Table 5: Discussion of Short Run ARDL Error Correction Model

Regressors	Coefficients	t-Statistic	P-Value
D(DCF(-1))	0.2544	0.1913	0.1968
D(GCX)	-1.6946	-3.5086	0.0231
D(GRX)	0.4372	0.5592	0.5814
ECM(-1)	-0.74559	-3.8959	0.0007
R ² = 0.6036	f-stat=8.7558	Prob(f-stat)=0.00019	DW Stat=2.0102

Source: Authors' Computation from E-view 10

The results of the estimated model as presented in Table 5 showed that the R-squared (R²) is 60%, this showed that the model is a good fit. The Durbin Watson (DW) which measures the level of serial autocorrelation in an estimated model has a value of 2.010. This value is very close to the 2.0 DW benchmark, thus, it could be inferred that the model had no problem of serial autocorrelation. Given the occurrence of no serial correlation, the estimated model is valid for policymaking. Furthermore, the result of the short-run dynamic showed that the coefficient of the error correction term in the model has the hypothesized negative sign and statistically significant at a 5% conventional level. This indicated it adjustment from short-run equilibrium to long-run equilibrium in the dynamic model at a speed of 74.56%.

In the meantime, the estimated results in Table 5 showed that, in the short run, the coefficient of lag one value of DCF is positively related to economic discomfort but statistically not significant at 5% level. But the government capital expenditure (GCX) has a negative and significant relationship with economic discomfort (DCF). Thus, a percentage increase in government capital expenditure will significantly cause a corresponding decrease in economic discomfort by 1.694%. This result implies that as the government increases the percentage of her capital spending to provide social and economic services such as building new factories, roads, schools, hospitals, there will be a reduction in both unemployment and poverty which sum up to economic discomfort. This is because the provided infrastructure will be well utilized by individual and business organizations to better their lives and the country at large. The finding is in line with the Keynes hypothesis who averred that public expenditure through investment stimulates the economy, decreases unemployment, and makes family units feel wealthier (Keynes, 1939; Obayori & Robinson, 2019).

On the other hand, government recurrent expenditure (GRX) is positively and insignificantly related to economic discomfort. This negates economic theory which posited otherwise. Thus, a percentage increase in government recurrent expenditure will increase economic discomfort by 0.437%. The implication of this result is that increase in the recurrent component

of the expenditure will not help to reduce economic discomfort. Thus, the need to increase the capital component of the expenditure. The finding conforms to the work of Philip (2014) who examined the impact of government expenditure on unemployment and poverty rates in Nigeria and observed that government expenditure has a positive impact on the unemployment rate while it has an insignificant impact on the poverty rate.

4.3 Post Estimation Test

This section helps to validate the ARDL results to ascertain the usefulness of the estimated model for policymaking.

Table 6. Serial Correlation and Heteroscedasticity Tests

Test Type	Test Stat.	p-value	Critical Value
Serial Correlation	Chi-Square (X^2)	0.7201	0.05
Heteroscedasticity	Chi-Square (X^2)	0.667	0.05

Source: Authors' Computation from E-view 10

Table 6 showed that in the estimated ARDL model, serial autocorrelation is not a problem as a result of the fact that chi-square (X^2) probability values of 0.7201 exceed the 0.05 critical value. Thus, the null hypothesis of no serial autocorrelation was upheld. Similarly, the Autoregressive Conditional Heteroskedasticity (ARCH) result showed that in the model, heteroskedasticity is not a problem as a result of the fact that the Chi-square p-value of 0.667 is greater than the 5% conventional p-value. Meaning that the variance of the residual is constant over the sampled period.

4.3.1 Normality Test

The normality test as shown in Figure 1 showed that the error terms are normally distributed. This is because the probability values of the Jarque-Bera statistic (J-B stat) which is 0.321767 is greater than 0.05 critical value. Thus, it was concluded that the sample data fit a standard normal distribution.

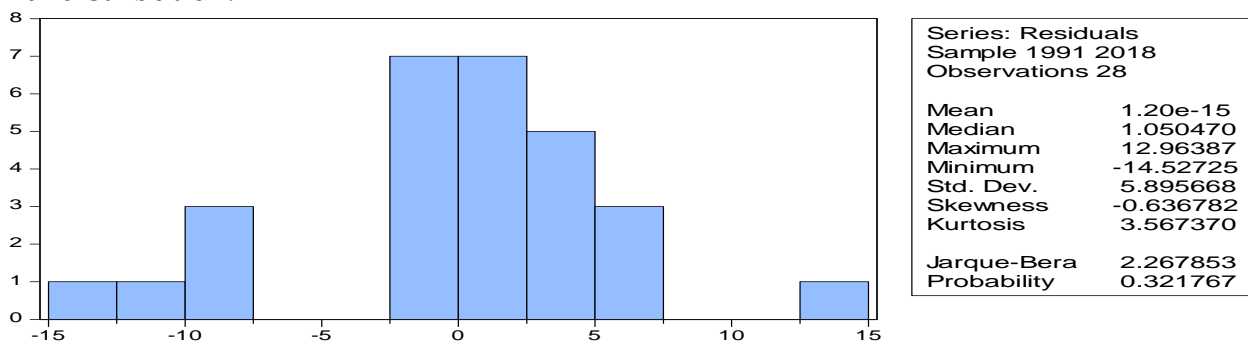


Figure 1: Normality Test Result

From the analyses in both Table 6 and Figure 1, the result of the post estimation tests is welcoming as they meet the statistical criteria and authenticate the reliability of the estimated model for policy formulation and recommendation.

5. Concluding Remarks

Government expenditure as a component of aggregate demand comprises both capital and recurrent components that embrace all spending at each level of government to meet the goal of stable long-run growth, economic efficiency, and poverty reduction. Thus, government expenditure affects the behavior of both producers and consumers and influence the distribution of income and wealth in the economy. But over the year, a cursory look at government expenditure (recurrent and capital) in Nigeria showed that it has been on the increase but the rate of increase has not translated into economic comfort (reduction in poverty and unemployment rates). Due to this assumption, this paper was initiated to essentially determine the impact of government expenditure on economic discomfort in Nigeria. Based on the empirical result, the paper concludes that government capital expenditure has a negative and significant relationship with economic discomfort. This result implies that as the government increases the percentage of her capital spending to provide social and economic services, there will be a reduction in both unemployment and poverty which sum up to economic discomfort. On the other hand, government recurrent expenditure is positively and insignificantly related to economic discomfort. The implication of this result is that increase in the recurrent component of the expenditure will not help to reduce economic discomfort. Based on the conclusion, the paper recommended that more government capital spending should be encouraged as it played a critical role in reducing both poverty and unemployment in Nigeria. Also, the government budget should focus less on recurrent spending that will not spur economic development vis-à-vis poverty and unemployment reduction.

Conflicts of Interest: The author declares no conflict of interest.

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Appendix 1: Research Data

YEAR	PVR (%)	UEP (%)	DCF (%)	GCX (₦ million)	GRX (₦ million)	TGX (₦ million)
1990	43.8	5.5	49.3	24.05	36219.6	36243.65
1991	42.5	5.7	48.2	28.34	38243.5	38271.84
1992	48	7.5	55.5	39.76	53034.1	53073.86
1993	53.9	7.2	61.1	54.5	136727.1	136781.6
1994	59	6.8	65.8	70.92	89974.9	90045.82
1995	66	6.4	72.4	121.14	127629.8	127750.9
1996	68	6.4	74.4	212.93	124491.3	124704.2
1997	69	8.5	77.5	269.65	158563.5	158833.2
1998	67	7.6	74.6	309.02	178097.8	178406.8

YEAR	PVR (%)	UEP (%)	DCF (%)	GCX (₦ million)	GRX (₦ million)	TGX (₦ million)
1999	70	8.5	78.5	498.03	449662.4	450160.4
2000	72	11.5	83.5	239.45	461.6	701.05
2001	68	9.6	77.6	438.7	579.3	1018
2002	72	8.8	80.8	321.38	696.8	1018.18
2003	78.6	10.8	89.4	241.69	984.3	1225.99
2004	51.5	10.2	61.7	351.25	1032.7	1383.95
2005	62.2	9.4	71.6	519.47	1223.7	1743.17
2006	65.3	9.9	75.2	552.39	1290.2	1842.59
2007	67.5	10.9	78.4	759.28	1589.3	2348.58
2008	71.3	12.8	84.1	960.89	2117.36	3078.25
2009	76.46	11.2	87.66	1152.8	2127.97	3280.77
2010	61.2	11.5	72.7	883.87	3109.44	3993.31
2011	64.5	14.6	81.1	918.55	3314.51	4233.06
2012	71.09	12.4	83.49	874.7	3325.16	4199.86
2013	61	12.8	73.8	1108.39	3214.95	4323.34
2014	58.2	14.3	72.5	783.12	3426.94	4210.06
2015	63.63	14.4	78.03	818.35	3831.98	4650.33
2016	63.93	14.2	78.13	918.81	3946.94	4865.75
2017	62.02	17.5	79.52	946.37	4065.35	5011.72
2018	63.08	18.3	81.38	894.51	3948.09	4842.6

Sources: CBN Statistical Bulletin (Various Issues) & World Development Index 2018

Note: PVR=Poverty rate, UEP=Unemployment rate, DCF= Discomfort index, GCX= government capital expenditure, GRX= government recurrent expenditure, and TGX= Total government expenditure.