

Fiscal Consolidation, Macroeconomic Reform and Poverty Reduction in Nigeria, 1981-2020

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Abstract

Advancing macroeconomic reform in Nigeria has been buffeted by two set of problems: First, the economy is volatile, with loose fiscal policy and poor management of both the volatility and the fiscal policy. Fiscal consolidation is part of the macroeconomic reform agenda of policy makers, Nigeria inclusive. However, despite all these fiscal reforms, Nigeria continues to record fiscal imbalance with respect to poverty reduction. This paper examined the effects of fiscal consolidation as part of macroeconomic reforms to reduce poverty in Nigeria spanning the periods of 1981 to 2019. The sources of data include the Central Bank of Nigeria (CBN) Statistical Bulletin (2020) and the African Development Bank Database, AfDB (2020) and the dynamic autoregressive distributed lag approach (ARDL) were utilized for the examination. The variable of poverty ratio proxy for poverty as the dependent variable were used, while the independent variables are, debt-to-GDP ratio (%), private investment (% of GDP), public investment (% of GDP), population growth rate (%), inflation rate (%) and fiscal balance to-GDP. The results show that fiscal consolidation has negative effects on poverty reduction in Nigeria within the reviewing period. The policy implications of these findings on economic policy fiscal consolidation as part of the macroeconomic reforms has not helped in reducing poverty in Nigeria and this is clearly evidentiary. The paper therefore, recommended among others; the need for government and policy makers to sustain and strengthen the fiscal consolidation and the macroeconomic reforms in its entirety in order to promote economic growth, reduce poverty and ensure shared prosperity in the medium to the long-term.

Keywords: ARDL, economic growth, Debt-to-GDP, fiscal adjustment, fiscal balance-to-GDP, Nigeria, poverty reduction

JEL Codes: D31, E65, H61

Introduction

Poverty, in all its complex dimensions, is a condition with social and economic context and poverty reduction (or the lack thereof) always occurs within a macroeconomic context. History shows that high rates of economic growth sustained a period of time are necessary condition for poverty reduction, while the distribution of the benefits of growth determines the impact of poverty. The macroeconomic policy framework often set the parameters for social policies by defining the policy and fiscal space for government action.

Starting from the National Economic Empowerment and Development Strategy (NEEDS/LEEDS) to Vision-2020 to Transformation Agenda down to Economic and

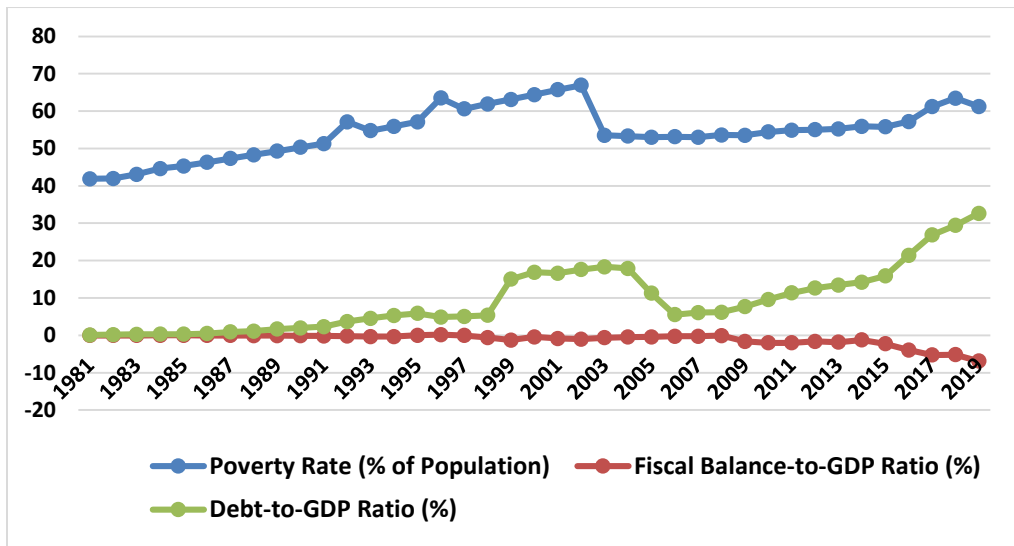
Recovery Growth Plan/Economic Sustainability Plan, the sole aim is to restructure the Nigerian economy via structural and macroeconomic reforms. Advancing macroeconomic reform in Nigeria has been buffeted by two set of problems: First, the economy is volatile, with loose fiscal policy and poor management of both the volatility and the fiscal policy. Two, there is no clear and consistent budgetary framework or budget process (Okonjo-Iweala, 2012). These two set of problems to say the least are intertwined and therefore needs permanent solution. Some of the macroeconomic/structural reforms include: Civil service reform; trade, tariff and customs reform; banking sector reform, and the due process reform. Despite all these reforms, Nigeria continues to record high increase in poverty, increasing inequality and lack of shared prosperity. The paper address the following questions: What are the effects of fiscal variables on poverty reduction in Nigeria? What are the lessons from graphical trends of these fiscal variables and poverty in Nigeria? How can fiscal policy be used to reduce poverty in Nigeria?

The main aim of the paper is to examine the effect of fiscal component of macroeconomic policy on poverty reduction in Nigeria between the periods 1981 to 2020. The sections of the study are structured as follows: Following the section one is the section 2 on reviews of the literature. Section 3 examine and identify the appropriate methodological approach for the paper through careful consideration of the research literature, while section 4 presents and discusses the results and key findings. Finally, section 5 concludes the paper in line with the initial aim and objectives and discusses the contributions that the research has made to: theory, method and policy purposes. The conclusion also highlights the limitations that surfaced during the research

Profiles

Figure 1 and 2 shows the trends of fiscal adjustment and economic growth and between fiscal adjustment and poverty rate in Nigeria between the periods of 1981 to 2019 (the reviewing periods). Three key relationships emerged from the analysis of data on the trend of GDP growth rate (annual %), fiscal balance-to-GDP ratio (%) and debt-to-GDP ratio (%). First, changes in GDP growth rate (annual%) and fiscal balance-to-GDP ratio (%) move in the same direction, suggesting that as fiscal balance-to-GDP ratio is maintained, GDP growth rate (%) accelerates. Second, debt-to-GDP ratio and GDP growth rate (annual %) move in opposite directions, implying that as growth improves, debt to GDP reduces; and third, fiscal balance-to-GDP ratio (%) and debt-to-GDP ratio (%) is not correlated suggesting there should be no trade-off between fiscal balance-to-GDP ratio (%) and debt-to-GDP ratio (%)

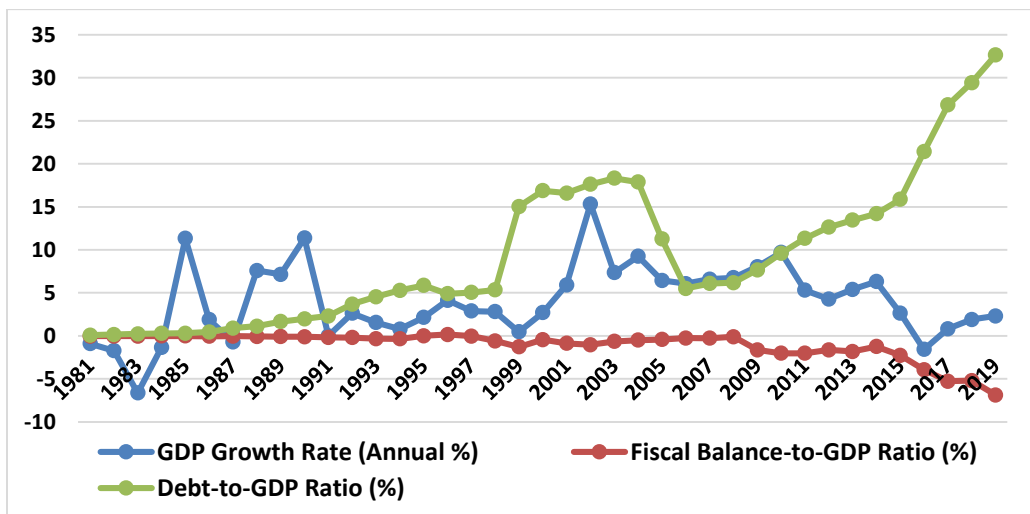
Figure 1: FISCAL AGGREGATES AND POVERTY MOVEMENTS IN NIGERIA, 1981-2019.



Source: AfDB Database (2020)

From figure 1, we can see that debt-to-GDP ratio (%) and fiscal balance-to-GDP ratio (%) moves in the same direction, suggesting that both deteriorate economic growth, while poverty rate moves in opposite direction with both fiscal balance-to-GDP ratio (%) and debt-to-GDP ratio (%) implying that as debt-to-GDP and fiscal balance-to-GDP improves, economic growth improves in other way.

Figure 2: FISCAL AGGREGATES AND ECONOMIC GROWTH PROFILE IN NIGERIA, 1961-2019.



Source: AfDB(2020)

From figure 2, we can see that debt-to-GDP ratio (%) and fiscal balance-to-GDP ratio (%) moves in the same direction, suggesting that both deteriorate economic growth. This implies that as debt-to-GDP and fiscal balance-to-GDP improves economic growth declines in the other way.

Empirical Literature Review

The reviewed empirical literature are examined in the section. For example, Alesin & Perotti (1996a) performed a cross-country analysis of fiscal management in the industrial countries, concentrating mainly on the composition of the adjustments. They found some evidence that investment is 'crowded in' during fiscal consolidations, that international competitiveness, defined as the ratio of home to foreign unit labour costs, improves. They concluded that it is the composition of the consolidation that matters. Alesina and Perotti (1995) concentrated on analysing the macroeconomic effects of fiscal management and find that in cases where the ratio of debt to GDP is successfully put on a declining path, real GDP tends to accelerate and the unemployment rate tends to decline.

Bertolini, Razin & Symansky (1995) studied the macroeconomic effects of the fiscal restructuring undertaken in the 1990s in the G7 countries using the IMF's multi-country model (MULTI MOD). They found out that those countries that rely primarily upon increases in indirect taxes and expenditures cuts faces steeper short-run output losses, but can expect a quicker recovery and greater output benefits within a decade. Their general conclusion is that fiscal consolidation leads to output losses initially followed by recovery.

McDermott & Wescott (1996) examined fiscal consolidation and consolidation experiences of the industrial countries over the period 1970 to 1995 using a descriptive and trend approaches. A key finding is that fiscal consolidation need not trigger an economic slowdown. Fiscal consolidation that concentrates on the expenditure side, and especially on transfers and government wages, is more likely to succeed in reducing the public debt ratio than tax based consolidation.

Jeong (1998) estimated the effects of fiscal consolidation on economic growth by using panel datasets from 18 OECD countries. The estimates of dynamic panel data GMM analysis show that fiscal consolidation is not likely to be expansionary for GDP growth. Both Avellano-Bond difference GMM and Blundell-Bond system GMM estimation suggest that fiscal consolidation has negative effects on economic growth.

Agnello and Sousa (2012) explored how fiscal consolidation impacts on income inequality. Using a panel of 18 industrialized countries from 1978 to 2009, the study found out that income inequality significantly rises during periods of fiscal consolidation. When consolidation plans represent a small share of GDPP, the income gap widens, suggesting that the burden associated with the effort affects inappropriately households at the bottom of the income distribution. Similarly, fiscal consolidation programmes combined with inflation are likely to increase inequality and the effects of fiscal adjustment on inequality are exemplified during periods of relatively low growth.

Kleis and Moessinger (2016) examined the long run effect of fiscal consolidation on economic growth on case studies of OECD countries using synthetic control method (SCM). The results do not offer clear-out evidence on the long-run effect of fiscal consolidation on economic growth. Accordingly, half of the case studies point to a positive effect with the other half indicating a negative effect on economic growth trajectories.

Deyal, Alvarez and Waithe (2019) examined economic growth, debt and fiscal adjustment in Barbados between 2017 and the first half of 2018, using the simulation approaches. Based on the simulations, the debt-to-GDP ratio is forecast to range between 48 and 68 percent of GDP in FY 2033/34, depending on a high and low-growth scenario. It also shows negative deviations in real GDP growth, compared to the baseline scenario, would increase the projected debt-to-GDP ratio and require a higher primary fiscal surplus to achieve debt target.

In summary, from the empirical studies on fiscal consolidation, macroeconomic reforms and poverty reduction in Nigeria, the following is discernible: there are mixed results on the effects of fiscal adjustment or consolidation on the economy (economic growth/poverty reduction); some recorded positive relationship (Alesina & Perrotti, 1995b) while other studies (Bertolin *et al*, 1955, McDermott & Wescott, 1996; Deyal *et al*; 2019; Jeong, undated) showed negative relationship, Kleius and Moessinger showed inconclusive result from the general empirical papers , not much work have been carried out in fiscal consolidation and macroeconomic reform on economic growth and poverty reduction.

Again, there is no identified paper on fiscal consolidation and macroeconomic reform on poverty reduction. Therefore, the lack of consensus on the effects of fiscal consolidation and macroeconomic reform on poverty reduction in Nigeria justifies the current research efforts to extend to the few existing knowledge on fiscal consolidation and macroeconomic reform on poverty reduction.

The Model and Data

The Model and estimation Technique

The paper is anchored on framework provided by McDermott & Wescott (1996) and Agnello & Sousa (2012). The model of the paper is specified as thus:

$$POVTR = f(FBGDP, DBGDP, PBINV, PoPGR, INFLR) \quad (3.1)$$

Equation 3 can be stated in more explicit form s follows:

$$POVTR = f(\alpha_0 + \alpha_1 FBGDP + \alpha_2 DBGDP + \alpha_3 PBINV + \alpha_4 PoPGR + \alpha_5 INFLR + \mu_2) \quad (3.2)$$

Where POVTR= poverty rate, FBGBP = Fiscal balance-to-GDP ratio; PBINV = Public sector investment (% of GDP); PRINN = Private sector investment (% of GDP); LABoF=proxy for population growth rate (annual %), INFLR = inflation rate and DBGDP = Debt-to-GDP ratio (%). The variables and measurements are provided in Table 3.1.

Table 3.1: Description and Sources of Variables

Variables	Description and measurement	and Source(s)
Debt-to-GDP ratio	Proxy for fiscal adjustment. Measured in ratio. (Explanatory variables)	African Development Bank Database, 2020 (AfDB)
Private investment	Control variable. Measured in % of GDP	Central Bank of Nigeria statistical bulletin, 2019
Public investment	Control variable. Measured in % of GDP	Central Bank of Nigeria statistical bulletin, 2019
Population Growth	Control variables. Measured by Labour Force Annual growth	African Development Bank Database, 2020
GDP Growth Rate	One of the dependent variable for economic growth rate in percent.	AfDB (2020)
Inflation rate	Control variable. Measured on Year-on-year rate (YOY).	CBN Statistical Bulletin, (2020)
Fiscal balance to GDP	Proxy for fiscal adjustment. Measured in percentage rate.	AfDB (2020)
Poverty rate	Other dependent variables. Measured in percentage rate.	AfDB (2020), CBN Statistical Bulletin, 2020.

Stationarity Test

On the submission of Datta and Kumar (2011), regressing a non-stationary series on another would generate spurious result. In an attempt to guide against spurious results, Augmented Dickey-Fuller (ADF) technique developed by Dickey and Fuller (1979) was employed. This test becomes necessary as it guides the research on the selection of appropriate estimation technique required for the analysis. The trend and intercept of the unit root are represented in equations (4) and (5), respectively

$$\text{Equation 4} = \Delta\gamma_t = \beta_0 + \Delta\gamma_{t-1} + \beta_1 + \Delta\gamma_{t-1} + \mu_t \text{ for intercept}$$

$$\text{Equation 5} = \Delta\gamma_t = \beta_0 + \Delta\gamma_{t-1} + \beta_1 + \beta_2\Delta\gamma_{t-1} + \mu_{t1} \text{ for trend}$$

Where γ_t the tested variable for unit root is, Δ is he first difference, μ_{it} denotes error term at period I, γ_{t-1} represents the one period of lag of the tested variables for unit root.

Autoregressive Distributed Lag (ARDL)

ARDL model was developed by Pesaran, Shin and Smith (1996) and ;later popularised by Pesaran, Shin and Smith (2001) is more advantageous to other co-integration procedure as it can be used when the variables under consideration are integrated of order zero I(0) and order I(1) is found. With this, bound test eliminates the variability in the order of integration against co-integration approach. Also, it produces better result because the error correlation mechanism can be obtained via simple linear transformation, which integrates short-run adjustments with long-run equilibrium without losing any information in the long-run.

Two sets of adjusted critical value put forward by Pesaran, Shin and Smith (2001) are the lower and the upper bounds. The former assumes that all variables are I(0), while the latter indicates that they are all I(1). The decision is that the null hypothesis of no co-

integration is rejected if the F-Statistics falls above the critical upper bound test, while the null hypothesis cannot be rejected if it falls below the lower bound. Finally, the result would be rejected as inconclusive if it falls between the lower and upper bound. In line with Pesaran et al (2001), the unrestricted error correlation mechanism for testing the co-integration among the variables used in the paper is stated thus (see Appendix1).

The ARDL long-run mode is estimated if co-integration is found while the shot-run model is estimated if otherwise. The β_0 - β_7 are the short run elasticities, α_0 - α_7 are long-run elasticities, ECM_{t-1} is one lag of error correlation term, Δ is first difference, μ_{t-2} is the white noise, β_0 is the constant terms.

$$\begin{aligned} \Delta PoVTR = & +\vartheta_0 + \sum_{t=1}^n \vartheta_1 \Delta PoPVTR_{t-1} + \sum_{i=1}^n \vartheta_2 FBGDP_{t-1} + \sum_{i=1}^n \vartheta_3 DBGDP_{t-1} \\ & + \sum_{i=1}^n \vartheta_4 PBINV_{t-1} + \sum_{i=1}^n \vartheta_5 PoPGR_{t-1} + \sum_{i=1}^n \alpha_6 INFLR + \beta_1 POVTR_{t-1} \\ & + \beta_2 FBGDP_{t-1} + \beta_3 DBGDP_{t-1} + \beta_4 PBINV_{t-1} + \beta_5 PoPGR_{t-1} \\ & + \beta_6 INFLR_{t-1} + \beta_7 GDPGR_{t-1} - 1 + \mu_2 \end{aligned}$$

Stability/Diagnostic Test

In line with the assumptions of the Ordinary Least Square (OLS), the workhouse of econometric analysis, the reliability (diagnostic) and stability tests (the LM) test, the normality test (Breusch-Pagan) the linearity (Ramsey-Rest) test. For the stability tests, the cumulative sum (CUSUM) and the cumulative sum square (CUSUM 8q).

Results Presentation and Analysis

This section begins with the descriptive statistics of the variables (Dependent and Independent). This is followed by analysing the trends of GDP Growth Rate (annual %), debt-to-GDP ratio (%) and fiscal balance-to-GDP ratio (%), and poverty rate (% of population). Table 4 reports the descriptive value of fiscal adjustment poverty economic variables employed. The table shows that the mean value of poverty rate, fiscal balance-to-GDP, debt to-GDP, private sector investment, public sector investment, population growth, and inflation rate is 10.28, 2.68, 3.46, 16.44, -1.22. The series that measures the level of discrepancy as shown in the standard deviation result is population growth, while public sector investment shows the lowest level. Skewness indicates the rate of asymmetry or discrepancy of the variables. Accordingly, INFLR, DOPGR, FBINN, DBGDP, and FBGDP have long off tail. This is because the variables exhibit negative values, while poverty rate and private sector investment have long right tail.

Kurtosis measures the pawedness and flatness of the series. The result shows that only DBGP is leptokurtic relative to its normal distribution because its value is greater than 3, while other variables have their kurtosis value lesser than 3, this shows that the peak of their distribution are less than normal (Platy Kurtis). Jarque-Bera statistical test indicates

the variables that are normally distributed as its measures the differences in the skewness and Kurtosis. The result shows that Jarque-Bera statistic rejects the null hypothesis of no normal distribution for all the variables. Thus, it is concluded that they are all normally distributed.

Table 4.1: SUMMARY OF DESCRIPTIVE STATISTICS

Statistic	GDPGR	POVTR	FBGDP	DBGDP	PBINV	POPGR	INFLR
Mean	10.28	2.68	3.46	16.44	-1.22	6.24	-3.5
Median	10.07	2.48	2.72	4.46	-1.13	6.43	6.11
Maximum	11.82	4.62	3.21	5.74	-0.68	10.13	8.54
Minimum	9.72	1.28	2.00	-0.64	-2.24	2.16	1.56
Std. Dev	0.56	0.69	0.31	2.07	0.40	2.62	2.43
Skewness	0.29	0.73	-0.87	-0.86	-0.66	-0.08	-0.31
Kurtosis	1.85	2.60	3.67	2.24	2.74	1.59	1.68
Jarque-Bera	3.78	3.73	5.71	5.77	2.97	3.29	3.44
Probability	0.13	0.24	0.01	0.06	0.32	0.15	0.18
Sum	401.04	184.63	107.48	134.28	-46.52	250.00	211.78
Sum-Sq-dev	11.94	18.32	3.66	163.28	6.42	250.07	224.03
Observation	38	38	38	38	38	38	38

Source: Researchers Computation using E-View 10:0

Note: E-View (Econometric View 11.0)

Table 4.2: UNIT ROOT TEST RESULTS

Variables	Critical values (%)	PP t-statistic/ADF t-Statistic				Prob.	Order of Interaction
		Level	Difference	Level	Difference		
GDPGR	-2.94	-2.14	-14.15	-1.95	-7.93	0.072	I(1)
POVTR	-2.94	0.91	-6.19	-1.90	-6.32	0.33	I(1)
FBGDP	-2.94	6.57	-4.00	3.17	-5.07	1.000	I(0)
DBGDP	-2.94	1.39	-3.36	-0.34	-3.586	0.97	I(1)
PBINV	-2.94	-1.27	-7.66	2.46	-7.59	0.4262	I(1)
POPGR	-2.94	0.66	-4.45	-4.94	-3.36	0.1513	I(0)
PRIINV	-2.94	-0.43	-10.54	1.945	-10.12	0.0716	I(1)
INFLR	-2.94	-1.80	-9.92	-2.91	-2.84	0.0713	I(1)

Source: Researchers Computation using E-view 11:0

Table 4 reveals the unit root test results using the standard statistics, from the results, the variables FBGDP and POPGR are stationary at its levels, i.e. I(0), while the rest of the variables are integrate at its first difference. The results therefore provide the basis for the paper to adopt the autoregressive distributed lag for both short-and long-run estimation of the model. Table 5 shows the lag selection criterion suggested by LR, FPE, AIC, S, HQ. The results show that the optimum number of lag for the paper is 1. The suggestion is taken into account when analysing ARDL.

Table 4.3: LAG SELECTION RESULTS

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-90.12	NA	5.20	5.40	5.61	5.40
1	150.85	270.55*	1.08	-5.17*	-2.78	-4.21
2	226.83	87.25	3.74	-6.25	-2.51	-5.06
3	318.54	72.03	8.46*	-7.28	-2.36	-6.43*

Source: Researchers Computation using E-vie 11.0

Note:* Indicates the selected lag order by criterion, Likelihood ratio test (LR), Final Prediction Error Criteria (FPE), Akaike Information Criteria (AIC), Schwarz Information Criteria (SC) and Hanna-Quinn Information Criteria HQ.

Table 4.4: COINTEGRATION RESULTS USING ARDL APPROACH

Model	F-statistics	6
F(FBGDP, PBINV, PRINO, POPGR, INFLR)	15.52788	6
Bounds Test Result		
Significance	T90) Bound	I(1) Bound
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source: Researchers Computation using E-View 10.0

The bounds test result in table 4.4 for Poverty (POVIR) shows that the F-statistics (15, 53) approximately is beyond all the significance levels. The panel B results also indicate that there is a long-run relationship between poverty and the associated variables.

Table 4.5: ARDL LONG-RUN RESULTS

Variable	Coefficient	t-statistics	Prob.
Long-Run Relationship			
C	588.3003	2.796207	0.0105
GDPGR*	-1.461110	-5.417346	0.000
DBGDP	0.217592	0.867017	0.3953
FBGDP*	1.657569	1.613122	0.1210
PBINV	0.177933	1.175733	0.2523
LABOF**	-18.70090	-2.769715	0.0112
PRINV**	-0.629977	-1.909310	0.0693
INFLR**	-0.058495	-1.471229	0.1554
Short-run Dynamics			
C	588.3003	7.910337	0.0000
D(GDPGR)	0.422530	3.129828	0.0049
D(DBGDP)	0.521085	2.278039	0.0328
D(PBINV)	-0.152265	-1.110407	0.2788
CointEq(-1)*	-1.46110	-7.907038	0.0000

R-square =	0.725115	Prob F-statistics)	0.00002
Adjusted R-squared	0.656394	Mean dependent var	0.247992
S.E of Regression	2.738635	S.D. dependent var	4.672010
		DW	=2.47

Source: Researchers Computation using E-View 10.0

* P-value incompatible with t-Bounds distribution.

** Variables interpreted as Z-Z(-1)+D(Z)

Table 4.5 explains the short-run relationship that shows whether fiscal adjustments have effect on economic growth in Nigeria. First, the significance of error correction mechanism (ECM) result and the negative sign of the coefficient lend credence to the establishment of co-integration among the variables influencing GDPGR. However, the result of the ECM with (-1) needs to be interpreted with much caution as the conventional is (-0.). This coefficient indicates -1.46 and suggests that about 15% of previous year disequilibrium is correlated in the current year. Hence, the Parsimonious ECM adjusts rapidly to change in the long run. From the short-run results, the coefficient of determination is 0.72, meaning that that explanatory variables account for about 72 percentage point of the variations in GDPGR. This implies that the null hypothesis of no effect is rejected, while the hypothesis that fiscal adjustment has effect on GDPGR is accepted. The R-Bar squared at 0.65 implies that the fiscal adjustment and economic growth equation has good predictive ability while the standard of error of regression line implies that the overall goodness-of-fit at 2.74 implies that the equation has reliability prediction power.

In terms of the signs and magnitude of the coefficients, the long-run results indicates that debt-to-GDP ratio, fiscal balance-to-GDP growth rate. In line with the theoretical postulation, such that a unit increase in DBGDP will lead to 0.2 or 2 percent increase in GDPGR, 1.6% increase in GDPGR and 0.17 percent increase respectively. Similarity the population growth rate, private investment and inflation negatively influences GDP growth. That of inflation is expected. This implies that a unit increase in the labour force rate, private sector investment and inflation rate will lead to 18%, 6% and 1% decrease in GDPGR respectively.

Table 4.6: ARDL LONG-RUN (A) AND SHORT-RUN RELATIONSHIP (B) FOR POVTR

Variable	Coefficient	t-statistics	Prob.
Long-Run Relationship			
C	90.16724	2.075763	0.0622
POVTR*	-0.769531	-5.021133	0.0004
FBGDP	-5.652301	-5.229311	0.0003
DBGDP	-1.294356	-4.721725	0.0006
PBINV	0.483897	4.306580	0.0012
PRINV	2.442067	5.786556	0.0001
INFLR	0.088072	1.494561	0.1632
POPGR	-24.99430	-1.664341	0.1242
Short-run Dynamics(ECM)			
C	90.16724	13.02180	0.0000
D(POVTR)	0.288279	3.568449	0.0044
D(FBGDP)	-1.708147	-4.150938	0.0016

D(FBGDP)(-1)	1.417083	2.624292	0.0236
D(DBGDP)	-0.371355	-3.068902	0.0107
D(DBGDP)(-1)	0.443599	3.209668	0.0083
D(PBINV)	0.101111	1.602437	0.1374
D(PRINV)	0.013710	0.132393	0.8971
D(PRINV)(-1)	-1.251854	-6.970689	0.0000
D(PoPGR)	390.1540	6.832620	0.0000
D(PoPGR)(-1)	-365.1066	-5.348694	0.0002
D(INFLR)	-0.112072	-7.806093	0.0000
D(INFLR)(-1)	-0.036396	-2.719224	0.0200
CointEq(-1)*	-0.769531	-12.96084	0.0000
R-square =	0.951520	Mean dependent var	0.504400
Adjusted R-squared	0.900189	S.D. dependent var	2.969323
S.E of Regression	0.938094	DwrbinWakon	3.094253
F-statistics	18.53684		
Prob. (F-statistics)	0.000000		

Source: Researchers computation using E-view 10.0

Note: P-value incompatible with t-bounds distribution

Table 4.6 explains the short-run relationship showing the relationship between fiscal adjustment and poverty. The result show that the coefficient of ECM had the appropriate negative relationship, thereby further explains the co-integration among the variable of fiscal adjustment influencing poverty. The coefficient f 0.769, suggesting that about 76 percent of previous year disequilibrium is corrected in the current year. From the short-run relationship results, the coefficient of determination is 0.95, meaning that the explanatory variable account for 95% change/variation in the independent variable (poverty). The adjusted R-square has a value of 0.900 percent; implying that the explanatory variable account for 9 percent predictive poverty.

The overall goodness of fit as shown by the S.E.E, at 0.93 or 93% is good enough to explain the reliability of the models prediction power. The table also show the signs and magnitude of the coefficient, the long-run indicates a negative relationship between the fiscal adjustment variables (FBGDP, DBGDP) and poverty. This implies that fiscal adjustment affects poverty reduction, such that 1 percentage increment in fiscal adjustment would lead to 5.65 and 1.29 percent respectively. The results are negations of the heretical postulations. PBINV, PRINV and INFLR are positive related to poverty reduction. The poverty relationship between inflation an poverty may be as a result of the macroeconomic reform. The coefficient of PoPGR is negatively related to poverty such that a percentage increment in the labour force increases poverty by 2%.

Table 4.8: MODEL DIAGNOSTIC TEST (POVTR)

Statistics	Values	
Normality test		
Tarque-Bera	0.639655	0.726274
Serial correlation LM test		
Obs* R-Squared	0.639655	0.726274
Heteroskedasticity test		
Obs* R-squared	2.348710	0.4829
Ramsey RESET test		
t-statistics	0.569830	0.5814
f-statistic	0.3247.6	0.5814

Source: Researchers Computation using E-View 10.0

Table 4.8 presents the post-estimation tests to examine the suitability of the model using the normality test, serial correlation test, heteroskedasticity test and the Ramsey Reset test for both the fiscal adjustment poverty and the fiscal adjustment-economic growth models. From Table 9 the estimates show that the variables are normally distributed, o problem of serial correlation and no problem of heteroskedasticity, from the Ramsety Reset estimates, the models are well fitted. The stability test using the cumulative test(CUSUM) and cumulative sum of square(CUSUM SQ) shows that the models (POVTR) and (GDPGR) are well fitted, conforming the diagnostic tests.

The test decision is that, if the plotted CUSUM and CUSUM Sq statistics lie within 5% significance level, the tests (not-shown here) shows that both the CUSU and the CUSUM square test for both models (POVTR) and (GDPGR) falls within the 5% level of significance (indicated) by the two red lines) (Durbin, Brown & Evans, 1975).

Discussion of Results and Policy Implication of Findings

The estimates of fiscal consolidation were positively and significantly relate to economic growth (GDPGR) within the reviewing period. Public sector investments were also positively related to growth. The positive relationship between investment and economic growth has been established in the empirical literature (De Long & Summers, 1992). The negative relationship between private sector investment and population force is not surprising as the theoretical assumption. Lack of infrastructure also stifles private domestic investment. This is a major concern and a reiterating result for government action of Nigerian business environment. The high unemployment rate among the Nigerian graduates could be the plausible explanation for the negative relationship between population growth and economic growth. The negative relationship between inflation rate and economic growth in Nigeria within the reviewing period is expected. From the results, the estimate of fiscal adjustment has positive effect on economic, a result that is in consonance with the earlier findings of Klies and Moessinger (2016) who also found a negative relationship. Arizala *et al.* (2020) concludes that fiscal consolidations based on reducing public investment have the largest effect on output, while fiscal consolidation based on revenue mobilization are less harmful. These findings suggest that the negative impact on growth can be mitigated through the design of fiscal adjustment.

From Table 4.7-the long run results of the relationship between fiscal adjustments, these exist a negative relationship between FBGDP and DBGDP-variables of fiscal adjustment and poverty rate. This is together with population growth. Meanwhile, positive and significant relationship exists between private and public sector investments and poverty rate. The negative relationship between fiscal adjustment as represented by FBGDP and DBGDP and poverty reduction may follow the findings of Owuru and Farabiyi (2016), that reported that the level of government capital expenditures in Nigeria does not reduce the level of poverty in te Nigerian economy. As such, fiscal adjustment within the reviewing period may not have contributed positively to poverty reduction.

Concluding Remarks

The paper examined the relationship between fiscal consolidations, macroeconomic reforms and poverty reduction in Nigeria between the reviewing periods 1981 to 2019. The data sources include the African Development Bank Database (2020) and central Bank of Nigeria (CBN) Statistical Bulletin (2020). The dependent variables of the model are poverty (POVTR) and economic growth (GDPGR). The explanatory variables are fiscal adjustment (FBGDP) and (DBGDPP while the control variables are private sector investment, public sector investment population growth rate and inflation rate. The ARDL is the preferred analytical approach based on its merits. The pre-post and stability test were carried out to ensure that the model is free from any estimation error. The summary of the major findings and implications are summarized as follows: (a) There exists positive effect of public investment on economic growth, while negative relationship exists between private investment and economic growth. (b) Labour force participation is negatively related to economic growth. (c) The estimates of fiscal adjustment have positive effect on economic growth.

From the above results and implications thereof, the following are recommended: (a) The Nigerian Government/policy-maker need to sustain public sector investment and possibly enabling the Nigerian domestic business environment. The ongoing strategies on e-registration of business need to be pursued. (b) The Government needs to seriously tackle unemployment in Nigeria and provide more policy incentives to job creation and job sustainability. (c) The current interest rate administration via the CBN needs to revisited in a bid to promote domestic investment (d) The fiscal reforms need to be sustained and strengthened in order to promote economic and reduce in medium to the long-term.

This paper extends and contributes to the literature on the effects fiscal consolidation on poverty in five ways: First, the paper showed why poverty matters and deserves policy makers' attention. Second, it also shows why fiscal consolidation matters for poverty reduction. Third, unlike previous research attempts, the paper used the most relevant variables for fiscal consolidation, a contribution to empirical/methodological approaches. Four, the paper shows some interesting stylized facts on fiscal consolidation aggregates and poverty reduction in Nigeria. Five, the paper empirically investigate the effect of fiscal consolidation on poverty reduction in Nigeria. Six, with the evidence, we offer policy suggestions in light of the evidence that would help Nigerian government and policymakers, to effectively tackle the problem of low economic growth and persistent increase in poverty.

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