



## POVERTY IN NIGERIA: THE ROLE OF ECONOMIC GROWTH, GOVERNANCE AND AGRICULTURE

\*<sup>1</sup>Osinowo, O. H., <sup>2</sup>Tolorunju, E. T. and <sup>1</sup>Oyesanwen, A. A.

<sup>1</sup>Department of Planning, Research and Statistics, Ogun State Ministry of Agriculture, Oke-Mosan, Abeokuta, Ogun State, Nigeria.

<sup>2</sup>Department of Agricultural Economics and Farm Management, Federal University of Agriculture Abeokuta, Ogun State, Nigeria.

\*Corresponding Author's Email: [writetokzy@yahoo.com](mailto:writetokzy@yahoo.com) +2348034705095

### ABSTRACT

Nigeria is a nation of riches with trajectories for poverty, wealth in the hands of few and extreme/abject poverty at the doorsteps of many. This study examined the role of economic growth, agriculture and quality of governance in explaining the wide differences in poverty level in Nigeria. The study used a 28-year period (1990 – 2018) time series secondary data. Data were analysed using Impulse Response Function (IRF) and Autoregressive Distributed Lag Model (ARDL). IRF revealed that there was a negative and positive response of POV to shocks in real GDP in Nigeria. ARDL showed that real GDP, inflation and unemployment are a key variables that can be used to enhanced poverty reduction and significant in both the short and long run. Similarly, education and agriculture value added also have a negative coefficient in the short run analysis which means the variables will lead to poverty reduction in the short run. The study recommended that pro poor policies should be designed for alleviating poverty and this should be centered on diversifying the Nigerian economy with agriculture so that the benefits of economic growth will trickle down to the agro-based rural population that constitute a larger proportion of the poor people.

**Keywords:** Nigeria, Poverty, Economic Growth, Unemployment and ARD

### INTRODUCTION

The decline of global extreme poverty continues, but has slowed, raising concerns about achieving the goal of ending poverty by 2030 and pointing to the need for increased pro-poor investments (World Bank, 2018). The deceleration indicates that the world is not on track to achieve the target of less than 3 per cent of the world living in extreme poverty by 2030. People who continue to live in extreme poverty face deep, entrenched deprivation often exacerbated by violent conflicts and vulnerability to disasters. Strong social protection systems and government spending on key services often help those left behind get back on their feet and escape poverty.

The share of the world population living in extreme poverty declined to 10 per cent in 2015, down from 16 per cent in 2010 and 36 per cent in 1990. However, the pace of poverty reduction is decelerating, with a “nowcast” of 8.6 per cent in 2018. Moreover, baseline projections suggest that 6 per cent of the world population will still be living in extreme poverty in 2030, missing the target of ending poverty (SDGs, 2019). Poverty in sub-Saharan Africa (Nigeria inclusive) is actually on the rise, with no signs of slowing down.

According to the National Bureau of Statistics (2012) report, 112.519 million out of an estimated 163 million of Nigeria's population live in relative poverty. Relative poverty is the comparison of the living standard of people living in a given

society within a specified period of time. Apart from the relative poverty index, Nigeria failed all poverty tests using all poverty measurement standards: absolute poverty measure puts the country's poverty profile at 60.9 percent; the dollar per day measure puts the poverty profile at 61.2 percent and the subjective measure puts the poverty profile at 93.9 percent (NBS 2012). The Human Development Index (HDI) of 0.423 also ranks Nigeria 142 out of 169 countries in 2010 with estimated GNI per capita of \$2156, life expectancy at birth of 48.4 years, Multidimensional Poverty Index (MPI) of 0.368 (UNDP, 2010). Presently, about 94 million people (47.7 Percent of the Nigeria's population) live in extreme poverty, according to estimates from the World Data Lab's Poverty Clock (World Poverty Clock, 2019). Around June 2018, Nigeria overtook India, a country with seven times its population, at the bottom of the table. Put in another context, if poor Nigerians were a country it would be more populous than Germany. Almost six people in Nigeria fall into this trap every minute (World Poverty Clock, 2019). Despite having a job, 8 per cent of the world's workers and their families still lived in extreme poverty in 2018. The situation remains particularly alarming in sub-Saharan Africa (Nigeria inclusive), where the share of working poor stood at 38 per cent in 2018 (SDGs, 2019).

Extreme poverty statistics have always been controversial. A number of countries and experts disagree with the way it is measured in monetary terms using the World Bank's \$1.90 earnings per-day as a benchmark. But no matter what the

arguments might be, at the root of poverty lies the deprivation of people's access to basic necessities such as food, healthcare and sanitation, education and assets. Therefore, solving these issues will generally lift populations out of extreme poverty.

The average Nigerian is a poor man. Nigeria is a nation of riches and poverty splendid, wealth in the hands of few and extreme/abject poverty at the doorsteps of many. The divergence between Nigeria's economic indicators, macroeconomic variables and the reality is a source of concern. The reality is that people die because they cannot afford three square meals a day as well as access basic public healthcare. As strange as this may sound, this goes on side-by-side with ostentatious display of wealth by the privileged few.

These problems are traceable to weak governance that the nation has experienced over the years, which are due to a combination of inefficient service delivery and inconsistent policy settings. In an attempt to proffer solution to the foregoing problems, it is therefore imperative to determine the role of economic growth, agriculture and quality of governance in explaining the wide differences in poverty in Nigeria. The role of governance in explaining poverty was accessed by introducing some indicators like education, infrastructure, corruption perception and absence of violence/political instability in the countries into the model. In addition to these, the role of agriculture was also assessed by introducing a variable on agriculture value added and agricultural land.

Extensive researches have been conducted on issues relating to poverty as well as its drivers in both the developed and developing countries. Previous studies have revealed that the extent of poverty depends on the income level and the extent of inequality in income distribution thus income inequality was found to be vital in the poverty reduction measures (Aigbokhan, 1997; Obadan, 1997; Bourguignon, 2003; Adams, 2004; Bulama, 2004; Bradshaw, 2006; Kalwij and Verschoor, 2007; Obi, 2007).

While many studies have examined the relationship between inequality and poverty (Bourguignon, 2003; Adams, 2004; Kalwij and Verschoor, 2007; Ogbeide and Agu, 2015), the question of whether a causal relationship exists between economic growths, quality of governance, agriculture and poverty, has received less attention in Nigeria. Knowledge of this will help policy makers in the development of correct policy that will tackle these world problems.

In this paper, the role of economic growth, quality of governance, agriculture as well as other macroeconomics indicators in explaining the wide differences in poverty in

$$\Delta I_n POVT_t = \varphi_0 + \sum_{i=1}^p \varphi_1 \Delta I_n POVT_{t-1} + \sum_{i=1}^p \varphi_2 \Delta I_n GDP_{t-1} + \sum_{i=1}^p \varphi_3 \Delta I_n INQ_{t-1} + \sum_{i=1}^p \varphi_4 \Delta I_n EDU_{t-1} + \sum_{i=1}^p \varphi_5 \Delta I_n COR_{t-1} + \sum_{i=1}^p \varphi_6 \Delta I_n POL_{t-1} + \sum_{i=1}^p \varphi_7 \Delta I_n INF_{t-1} + \sum_{i=1}^p \varphi_8 \Delta I_n UEM_{t-1} + \sum_{i=1}^p \varphi_9 \Delta I_n AGR_{t-1} + \sum_{i=1}^p \varphi_{10} \Delta I_n AGL_{t-1} + \beta_1 I_n POVT_{t-1} + \beta_2 I_n GDP_{t-1} + \beta_3 I_n INQ_{t-1} + \beta_4 I_n EDU_{t-1} + \beta_5 I_n COR_{t-1} + \beta_6 I_n POL_{t-1} + \beta_7 I_n INF_{t-1} + \beta_8 I_n UEM_{t-1} + \beta_9 I_n AGR_{t-1} + \beta_{10} I_n AGL_{t-1} + U_t \dots \dots (3)$$

The terms with summation signs represent the error correction dynamics while the second part of the equations with  $\beta_i$  corresponds to the long run relationship. In order to estimate the short-run relationship between the variables, the corresponding error correction equation is specified as:

Nigeria in recent times will be examined. Evidences will be provided on the trends as well as drivers of poverty in Nigeria. Unlike some of the previous studies, the current study will use the newly developed Autoregressive Distributed Lag (ARDL) model bounds testing approach to co-integration, and the Error Correction Model (ECM) method to examine the drivers of poverty.

The findings of this research will provide a quantitative policy framework to tackle the poverty problems that have eaten deep into the economy and also establish the basis for long-term and sustainable development in Nigeria. Consequently, the specific objectives of this study are to:

- i. evaluate the poverty reaction to structural shocks in economic growth in Nigeria, between 1990 and 2018.
- ii. determine the drivers of poverty in Nigeria between 1990 and 2018.

**MATERIALS AND METHODS**

This study employed time series secondary data and covered the period of 1990 to 2018. The data was sourced from Central Bank of Nigeria (CBN), United States Department of Agriculture (USDA), World Bank Development Indicators (WDI), Penn World Table and FAOSTATS data base. The data focus on poverty (POV), Real GDP (GDP), Inequality (INQ), Education (EDU), Corruption control (COR), Political Stability (POL), Infrastructure (INF), Unemployment Rate (UEM), Agriculture Value Added (AGR), and Agricultural Land (AGL).

The first objective (evaluate the poverty reaction to structural shocks in economic growth in Nigeria, between 1990 and 2018) was analysed by Impulse Response Function (IRF) as used by Ben-Kaabia *et al*, (2002). IRF produce a time path of dependent variable attributed to shock from the explanatory variable, thus the model is specify below:

$$POV = \alpha_1 + \alpha_2 GDP_{t-1} + \alpha_3 POV_{t-1} + U_1 \dots \dots \dots (1)$$

$$GDP = \alpha_4 + \alpha_5 POV_{t-1} + \alpha_6 GDP_{t-1} + U_2 \dots \dots \dots (2)$$

Where:

POV<sub>t</sub> = Poverty  
 GDP<sub>t</sub> = Real GDP

U<sub>1</sub> and U<sub>2</sub> = residual of poverty and real GDP.

A positive shock is given to the residuals (that is) of the above VAR model to see the response of the variable to each other. Secondly, the drivers of poverty in Nigeria was analysed by Autoregressive Distributed Lag (ARDL) bound testing approach and Error Correction Model (ECM) as specified in equation 3 and 4 below.

$$\Delta I_n POV_t = \varphi_0 + \sum_{i=1}^p \varphi_1 \Delta I_n POV_{t-1} + \sum_{i=1}^p \varphi_2 \Delta I_n GDP_{t-1} + \sum_{i=1}^p \varphi_3 \Delta I_n INQ_{t-1} + \sum_{i=1}^p \varphi_4 \Delta I_n EDU_{t-1} + \sum_{i=1}^p \varphi_5 \Delta I_n COR_{t-1} + \sum_{i=1}^p \varphi_6 \Delta I_n POL_{t-1} + \sum_{i=1}^p \varphi_7 \Delta I_n INF_{t-1} + \sum_{i=1}^p \varphi_8 \Delta I_n UEM_{t-1} + \sum_{i=1}^p \varphi_9 \Delta I_n AGR_{t-1} + \sum_{i=1}^p \varphi_{10} \Delta I_n AGL_{t-1} + \phi ECM_{t-1} + U_t \dots (4)$$

The  $\varphi_i$  are known as error correction coefficients and  $ECM_{t-1}$  is the error correction model.

where:

- POV<sub>t</sub> = Poverty
- GDP<sub>t</sub> = Real GDP
- INQ<sub>t</sub> = Income Inequality
- EDU<sub>t</sub> = Education
- COR<sub>t</sub> = Control of Corruption
- POL<sub>t</sub> = Political Stability
- INF<sub>t</sub> = Infrastructure
- UEM<sub>t</sub> = Unemployment Rate
- AGR<sub>t</sub> = Agricultural Value Added
- AGL<sub>t</sub> = Agricultural Land
- U<sub>t</sub> = Error term; all in time t.
- Δ = First difference operator
- φ<sub>0</sub> = drift component / constant
- p = optimal lag length
- U<sub>t</sub> = error term assumed to be distributed as white noise.

**Results and Discussion**

**Poverty Reaction to Structural Shocks from Economic Growth (Reaction Function Analysis)**

Analyzing the poverty reaction to structural shocks in economic growth is handled mainly by studying the impulse response functions (IRF) and variance decomposition as used by

Hamilton, 1994; Onanuga and Shittu, 2010; Muftaudeen and Hussainatu, 2014. The horizontal axis in all graphs shows time period (a year, in this case). Points on the graph above zero display positive responses, while points below zero represent negative responses. In this study, the two variables of interest (POV and GDP) were transformed to logarithms because this can transform the data to percentage changes and make interpretation of the results, such as elasticity, more economically meaningful.

According to Hamilton (1994) and Muftaudeen and Hussainatu (2014) the size of innovation to be applied in calculating an impulse response function is set to be 1 standard deviation of the error term. By using the point estimate (the solid line) in Figure 1, it was observed that one standard deviation positive shock to GDP, will leads to 0.58, 1.61, 1.32, 0.88 and 0.38 percentage point decrease in poverty in the second, third, fourth, fifth and sixth year respectively. This result satisfies *a priori* expectation that increase in GDP can help to enhance poverty reduction. Also from the same figure, it can be observed that a positive shock of one standard deviation to the residual of poverty will also reduce real GDP (economic growth) up to the fifth year. This result meets the *a priori* expectation and was in agreement with the findings of Fosu (2017). Table 1 showed the Cholesky forecast-error variance decomposition.

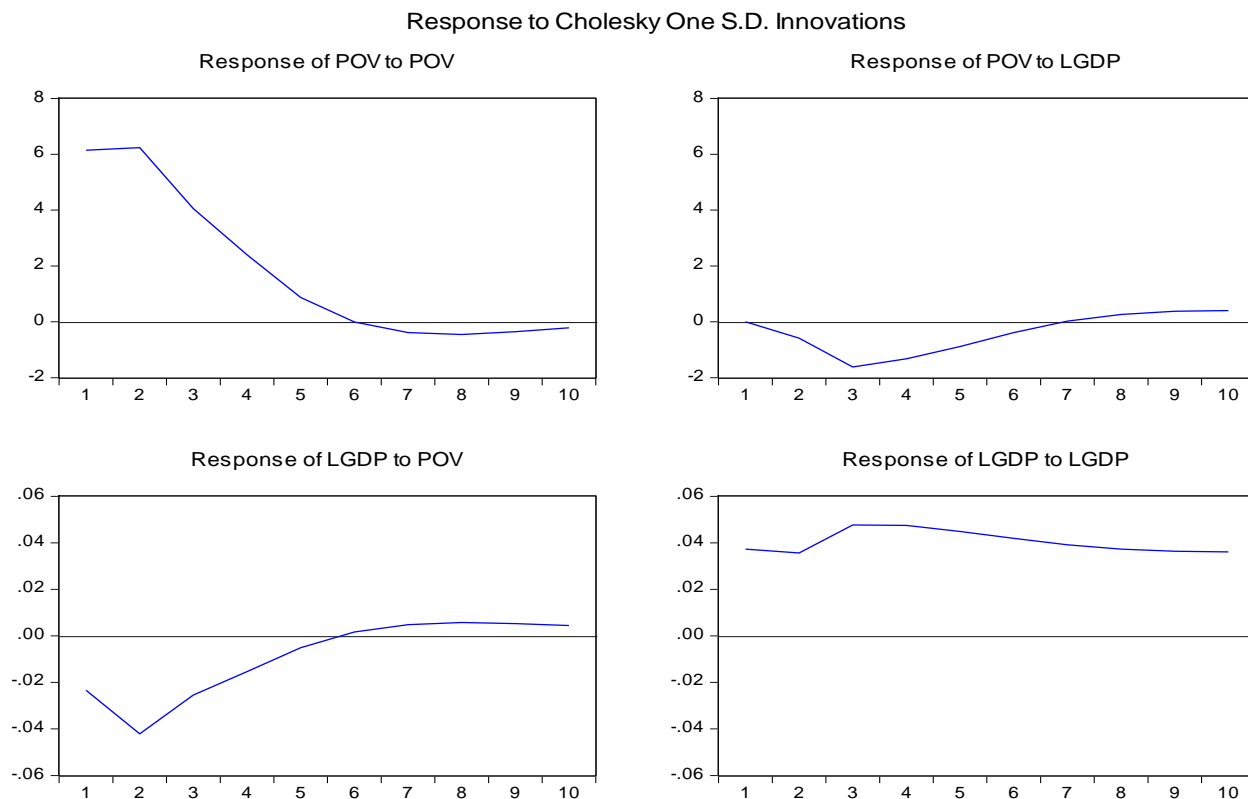


Fig. 1: Impulse Reaction Functions of POV to GDP Shock

**Table 1: Variance Decompositions (Forecast Variance Explained by innovations)**  
**Impulse Response to Cholesky (d.f. adjusted) One S.D. Innovations**

Response of POV:			
Period		POV	LGDP
1		6.147842	0.000000
2		6.235556	-0.581993
3		4.059379	-1.617658
4		2.397060	-1.323814
5		0.872466	-0.885971
6		-0.004060	-0.385988
7		-0.383383	0.020459
8		-0.451833	0.262309
9		-0.354103	0.375787
10		-0.212135	0.399775
Response of LGDP:			
Period		POV	LGDP
1		-0.023439	0.037275
2		-0.042056	0.035635
3		-0.025399	0.047636
4		-0.015364	0.047472
5		-0.005112	0.044855
6		0.001677	0.041937
7		0.004767	0.039095
8		0.005704	0.037310
9		0.005309	0.036387
10		0.004452	0.036098

Cholesky Ordering: POV LGDP

Source: Computed by the Author (2019)

**Unit Root Tests of Stationary of Variables**

All the variables in the model are subjected to stationary test using Augmented Dickey Fuller (ADF) Unit Root Tests. The results of these tests as reported in Table 2 below showed that some variables are stationary at levels, while others at their first difference, this implied that the variables could not be appropriately included in their levels in least square regression. Thus, the appropriate modelling techniques would be Autoregressive Distributed Lag (ARDL) model bound testing approach.

**Table 2: Unit Root Test Using Augmented Dickey Fuller Test (ADF)**

Variables	Level	First Difference	Order of Integration
POV	-1.8665	-3.7281**	I(1)
GDP	-2.4527*	-	I(0)
INQ	-3.3882**	-	I(0)
EDU	-1.1318	-4.4103**	I(1)
COR	-1.7400	-5.2348**	I(1)
POL	-4.2112**	-	I(0)
INF	-1.3070	-5.6156**	I(1)
UEM	-1.4869	-7.2878**	I(1)
AGR	-0.1252	-4.6243**	I(1)
AGL	-2.9795**	-	I(0)

NB: (\*) (\*\*) denote statistical significance at 5 and 1 percent level respectively

Source: Computed by the Author (2019)

**Tests for Co-integration**

Table 3 presents the estimate of the ARDL bounds test approach to cointegration.

**Table 3: ARDL Bounds Test**

Null Hypothesis: No long-run relationship exist		
F-statistic: 13.85423		
<b>Critical Value Bounds</b>		
Significance	I (0)	I (1)
10 percent	2.2	3.09
5 percent	2.56	3.49
2.5 percent	2.88	3.87
1 percent	3.29	4.37

Source: Computed by the Author (2019)

The ARDL bounds test revealed that there is long-run relationship between the variables since the F-statistic of 33.89092 is greater than I(1) critical value at 5 percent significance level. Therefore the null hypotheses of no long-run relationship among the variables are rejected at 5 percent significance level.

**Drivers of Poverty**

**Long Run Regression Results**

Having conducted the unit root and co integration tests, we proceeded to obtain the long-run relationship among the variable to determine the drivers of poverty income in Nigeria. The result presented in Table 4 revealed that some variables in the model satisfy the *a priori* expectation with respect to their negative signs. Real GDP (GDP), Inequality (INQ), Corruption (COR), Political Stability (POL), Infrastructure (INF) and Real Agricultural Value Added (AGR) have negative sign, which implies that increase in those variables will leads to poverty reduction in the long-run. Thus a unit increases in real GDP (GDP), Inequality (INQ), Corruption (COR), Political Stability (POL), Infrastructure (INF) and Real Agricultural Value Added

(AGR) will reduce poverty by 2.17 percent, 0.15 percent, 0.16 percent, 1.44 percent, 0.02 percent and 0.60 respectively in the long-run. The coefficient of GDP and INF are both statistically significant at 5 percent significance level. This finding is in conformity with the finding of Fosu (2017) that also discovered that a positive change in economic growth will enhance poverty reduction.

The empirical results of the long-run model further revealed that the coefficient of education (EDU), unemployment (UEM), and agricultural land (AGL) is positive in the long run. This implies that an increase in EDU, UEM, and AGL will increase the level of poverty in Nigeria by 1.52 percent, 4.88 percent, and 0.31 percent in the long run. The positive response of UEM was in consonance with *a priori* expectation and significant at 5 percent significance level, thus this finding corroborates the earlier findings of Ayala *et al.* (2017). The Positive response of

agricultural land (AGL) does not meet the *a priori* expectation and this might be connected to a substantial under-utilized arable land within the country.

Education (EDU) is also expected to reduce the poverty level, but reverse is the case in the long run relationship. This could be

due to high rate of unemployed graduate, weak institutional mechanism, and brain drain syndrome which characterize the country.

**Table 4: Drivers of Poverty in the Long Run**

Variables	Coefficient	T-Statistics
C	11.665536	4.281080**
GDP	-2.179358	-2.426722*
INQ	-0.151363	-0.328884
EDU	1.524193	1.198934
COR	-0.169034	-1.016388
POL	-1.441834	-1.113123
INF	-0.016267	-2.316198*
UEM	4.881772	2.214038*
AGR	-0.603517	0.911111
AGL	0.309349	0.914782
R-squared	0.807180	
F-Statistic	69.70425	
Akaike AIC	-3.990602	
Schwarz SC	-4.825057	

NB: (\*) (\*\*) denote statistical significance at 5 and 1 percent level respectively.

Source: Computed by the Author (2019)

**Error Correction Model**

The essence of ECM is to capture the effect of short run movement in the empirical models. It involves moving from over parameterization modelling to parsimonious model. The short-run dynamics is specified as an error correction model (ECM) incorporating the one period lagged residual from the static regression. The regressive distributed lag technique was used to obtain an over-parameterized equation (long run). Finally, through sequential reduction guided by the Akaike Information Criterion (AIC), a parsimonious result was obtained. The results of the parsimonious regression are summarized below in Table 5.

The significant of an Error Correction Model (ECM) shows the evidence of causality in at least one direction. The lagged error term (ECM<sub>t-1</sub>) in our results is negative and significant at 1 percent level. The coefficient of -0.345562 indicates high rate of convergence to equilibrium, which implies that the rate at which variation of growth of poverty at time t, adjusts to the single long-run co-integrating relationship is different from zero. The coefficient of the ECM revealed that the system is getting adjusted towards long run equilibrium at the speed of 34.56 percent.

Taking a descriptive examination of the parsimonious model from the table 10, the R-squared is 0.807180, which indicate that the model explained about 80.7 percent of the variability of the response data around its mean, that is 80.7 percent of total variance in poverty is explained by the regression equation. The F-statistic result of 67.70425 with probability value of 0.001016 shows that these explanatory variables are jointly significant in

explaining the variation in the dependent variable. The Akaike Information Criterion (AIC) value of -3.990602 and Schwarz Information Criterion value of -4.825057, which are at their minimum values, show the model selection criterion of the estimated model.

The lagged values of POV, EDU and AGR were included in the model to obtain more useful information relative to immediate past value over the study period. The lagged value of poverty POV(-1), the immediate past value is positively and significantly related with its own current year value at 1 percent level of significance. This means that one percent rise in the immediate past value of POV will increase the current poverty level.

Findings of this research revealed that real GDP (GDP) coefficient is negative and significant at 1 percent level of significance with a t-statistics value of -3.6364, thus one percent rise in GDP will reduce poverty by 0.36 percent. This was in consonant with *a priori* expectation and further corroborated the earlier findings of Adams (2004) and Fosu (2017) who discovered that a positive change in economic growth is prone to poverty reduction in Nigeria. However, the finding of Okoroafor and Nwaeze (2013), Nindi and Odhiambo (2015) is not in consonant with this finding, their result shows that economic growth does not granger cause poverty reduction either in the short run or in the long run and they concluded that Nigeria is a nation in paradox – wealthy nation, poor people.

From the analysis result, it was observed that an increase in inequality (INQ) will leads to poverty reduction base on the negative coefficient but not statistically significance at 5 and 1

percent significance level. This finding suggests that inequality is not the major cause of poverty in Nigeria and in conformity with the finding of Fosu (2010) who discovered that growth was the major factor behind falling or increasing poverty in most of the developing countries, he concluded that inequality, nevertheless, played the crucial role in poverty behavior in a large number of countries. And, even in those countries where growth has been the main driver of poverty-reduction, further progress could have occurred under relatively favorable income distribution. Furthermore, the high rate of remittance in Nigeria as noted by Olowa *et al* (2013) might hide the effect of income inequality on poverty reduction in Nigeria, therefore for more efficient policy making; idiosyncratic attributes of countries should be emphasized. This could also be that the poor and the non-poor are both getting richer but the non-poor are getting richer at a faster rate than the poor are.

Education (EDU) has a negative coefficient as expected with no significant t-statistical value of -1.0967 at both 1 percent and 5 percent level of significance. However, by examining the lagged value of education EDU (-1), the immediate past value is also negative and significant at 5 percent significance level. It was established that a one percent increases in educational level will reduce poverty by 0.18 percent in the short run. Taking into account the coefficient of Corruption (COR) control, it has positive sign but not statistically significance at 5 and 1 percent significance level. The political stability (POL), on the other hand, has the expected negative relationship. This outcome meets the *a priori* expectation because it is expected that

political stability and absence of violence/terrorism should reduce poverty.

The Infrastructure (INF) coefficient is negative with a t-statistical value of -2.1481 and significant at 5 percent significance level. It was observed that one percent increase in the level of infrastructure would have decrease poverty by just 0.000013 percent thus this finding is consistent with *a priori* expectation. Unemployment (UEM) has a positive coefficient as expected and significant at 1 percent significance level with a t-statistical value of 2.88 indicating that an increase in the level unemployment rate will lead to increase in poverty rate, thus decrease in UEM will reduce poverty. This is in conformity with *a priori* expectation and corroborates the findings of Ayala *et al.* (2017).

The coefficient of agricultural value added (AGR) is positive, however, by examining the lagged value of agricultural value added AGR (-1)), the immediate past value is negative and significant at 5 percent significance level. It was noted that a one percent increases in AGR will reduce poverty by 8.79 percent in the short run, thus the lagged coefficient value was in conformity with *a priori* expectation. This result corroborated the earlier findings of Nwafor *et al.* (2011) and Oyinbo and Rekwot (2014) who concluded that alleviating rural poverty can only be achieved through increased investments in agricultural development by the public and private sector. Finally, taken a look of agricultural land (AGL) coefficient, it revealed that an increased in AGL will increase poverty by 0.91 percent but with no significant t-statistical value of 0.9974 at both 1 percent and 5 percent level of significance.

**Table 5: The Parsimonious Model (ECM)**

Variables	Coefficient	T-Statistics
POV(-1))	0.418234	4.183672**
GDP	-0.360391	-3.636388**
INQ	-2.168539	-1.021143
EDU	-5.732634	-1.096722
EDU(-1))	-0.176126	-2.012581*
COR	2.845080	0.728884
POL	-0.241207	-1.183941
INF	-0.000013	-2.148140*
UEM	1.270421	2.884038**
AGR	0.453215	6.230511
AGR(-1))	-8.786442	-2.050408*
AGL	0.906509	0.997463
ECM(t-1)	-0.345562	-5.640266**
R-squared	0.807180	
F-Statistic	69.70425	
Akaike AIC	-3.990602	
Schwarz SC	-4.825057	

NB: (\*)(\*\*) denote statistical significance at 5 and 1 percent level respectively.

Source: Computed by the Author (2019)

### Pre and Post Estimation/Diagnostic Test

From table 6 below, it was observed that the coefficients of the various diagnostic test are not significant at 5 percent significance level which indicates that the model passed all the tests and this implies that it has a correct functional form, its residuals are serially uncorrelated, normally distributed and homoscedastic. The result of correlation matrix also suggests absence of multicollinearity with the low degree of correlation between the explanatory variables.

**Table 6: Summary of Diagnostic Tests for the Model**

Test	Methods	F-Statistics	Prob.
Normality test	Jarque-Bera	5.725449	0.0981
Serial correlation test (LM)	Breusch-Godfrey	13.999019	0.1491
Heteroskedasticity test	Breusch-Pagan Godfrey	0.875483	0.6600

Source: Computed by the Author (2019)

### CONCLUSION

In most cases where growth occurs, poverty falls no matter whether inequality becomes greater or lesser. Furthermore, since similar growth rates impact differently on poverty reduction, we may conclude that growth is good for the poor, but it is not enough (essential but not sufficient condition for poverty alleviation). Growth by itself may not be long-lasting and sustainable. It is therefore essential to base the strategy of poverty reduction on rapid but sustained economic growth. Today, as millions of people still live in poverty in Nigeria, the most important challenge for policy makers is to ensure institutional pre-conditions and to combine pro-growth and pro-poor policies that will enable the poor to participate in the opportunities and to contribute to future growth.

In view of the above points, the following recommendations were made:

- i. Since economic growth (GDP) translates into poverty reduction in both short and long run, a situation that can only be sustained and improved upon if certain policy measures are put in place. Prominent among policy measures are stable macroeconomic policies, such as, sound fiscal and monetary policies that would create a hospitable climate for private investment and thus promote productivity that the poor and non-poor would benefit from.
- ii. Infrastructure (INF) is also one of the most important variable that influence poverty reduction and significant in both the short and long run. Therefore it is recommended that government should embrace more fiscal discipline and put-in-place policies that would promote critical infrastructural development which will accelerate the development of small scale enterprises.
- iii. Unemployment (UEM) is significant at both the long run and short run; therefore it's imperative that a concerted effort should be adopted in fighting this menace before they become insurmountable. The study recommends a structural shift in the macroeconomic policies towards employment generation. This should be

accompanied with the comprehensive overhaul of educational curriculum to ensure that vocational training and entrepreneurial skills are incorporated into the programmes of educational institutions to make graduates capable of running cottage industries, for instance. This will promote employment generation for teeming youths and therefore contribute to overall development in Nigeria.

- iv. It is worthy of note that Education (EDU) reduce poverty, this paper therefore recommended an increase in budgetary allocation to education as well as a review of the school curricula with a view to making the educational system more responsive to growth and poverty reduction in Nigeria.
- v. Agricultural Value Added (AGR) reduces poverty in both the long run and short run but significant only in the short run dynamic. It is therefore recommended that pro poor policies should be designed for alleviating poverty and this should be centered on diversifying the Nigerian economy with agriculture as the driver of the economy so that the benefits of economic growth will trickle down to the agro-based rural population that constitute a larger proportion of the poor people. This is in line with Badiene, (2008) who noted that agricultural growth has been and will remain key to reducing poverty and hunger.

### REFERENCES

- Adams, R.J. (2004). Economic growth, inequality and poverty: Estimating the growth elasticity of poverty. *World Development Journal*, 32(12), 1989-2014.
- Aigbokhan, B.E. (1997). Poverty alleviation in Nigeria: Some macroeconomic issues. *Proceedings of the 1997 Annual Conference of the Nigerian Economics Society*.



- Aku, P.S., Ibrahim, M.J. and Bulus, Y.D. (1997). Perspective on Poverty Alleviation Strategies in Nigeria. In *Proceedings of the Nigeria Economic Society Annual Conference on Poverty Alleviation in Nigeria 1997*. Ibadan: NES Pp 41-54.
- Ayala, L. Canto, O. and Rodriguez, J. G. (2017). Poverty and the business cycle: A regional panel data analysis for Spain using alternative measures of unemployment, *Journal of Economic Inequality*, 15(1), 47–73
- Badiene, O. (2008). Sustaining and Accelerating Africa's Agricultural Growth Recovery in the Context of Changing Global Food Prices. IFPRI Policy Brief 9. IFPRI, Washington, D.C.
- Bello, M.A. and Abdul, H. R. (2010). Has Poverty Reduced in Nigeria 20 Years After? *European Journal of Social Sciences*, 15(1), 7-17.
- Ben-Kaabia, M., Gil, J.M. and Chebbi, H. (2002). The effect of long-run identification on Impulse Response Function (IMF): An application to the relationship between macroeconomics and agriculture in Tunisia. *Journal of Agricultural Economics Review*, 3(2), 36-48.
- Blackwood, D. L. and Lynch, R. G. (1994). The Measurement of Inequality and Poverty: A Policymaker's Guide to the Literature. *World Development Report*, 22(4), 567 – 578.
- Bourguignon, F. (2003). The growth elasticity of poverty reduction: Explaining heterogeneity across countries and time periods, in T. Eichler and S. Turnovsky (Eds), *Growth and inequality*. Cambridge: MIT Press.
- Bradshaw, T.K. (2006). Theories of poverty and anti-poverty programs in community development. *Rural Poverty Research Center, RPRC Working Paper No. 06-05*.
- Bulama, B. (2004). Economic growth, inequality and poverty in Nigeria. Available from [http://www.lulu.com/items/volume\\_27/429000/429916/1/print/429916.pdf](http://www.lulu.com/items/volume_27/429000/429916/1/print/429916.pdf).
- De Janvry, A. and Sadoulet, E. (2000). 'Growth, Poverty, and Inequality in Latin America: A Causal Analysis, 1970–1994.' *Review of Income and Wealth*, 46(3), 267–87.
- Dollar, D. and Kraay, A. (2002). 'Growth is Good for the Poor.' *Journal of Economic Growth*, 7(3) 195–25.
- FAO (2013). FAOSTAT Statistical Database of the Food and Agriculture Organisation of the United Nations (FAO), Rome. Available at <http://faostat.fao.org/>. Accessed at various times.
- Fosu, A.K. (2017). Growth, Inequality, and Poverty Reduction in Developing Countries: Recent Global Evidence. *Research in Economics*, 71(2), 306–336.
- Hamilton, J.D. (1994). *Time Series Analysis*, Princeton University Press, Chapter 11, Pp 318-320.
- Irz, X.; Lin, L.; Thirtle, C. and Wiggins, S. (2001). Agricultural Productivity Growth and Poverty Alleviation. *Development Policy Review*, Vol. 19, Issue 4 pp. 449–466.
- Kalwij, A. and Verschoor, A. (2007). Not by growth alone. The role of the distribution of income in regional diversity in poverty reduction. *European Economic Review*, 51: 805- 829.
- Lopez, H. J. (2006). 'Does Poverty Matter for Growth?' In *Poverty Reduction and Growth: Virtuous and Vicious Circles*, Publication of World Bank. Washington, dc; Pp 103–127.
- Majid, N. (2004). Reaching Millennium Goals: How well does agricultural productivity growth reduce poverty? *Employment Strategy Paper 2004/12*, International Labour Organisation (ILO), Geneva.
- Muftaudeen, O.O. and Hussainatu A. (2014). Macroeconomic Policy and Agricultural Output in Nigeria; Implications for Food Security. *American Journal of Economics*, 4(2), 99-113.
- NBS (2012). *Nigeria Poverty Profile 2010*, Publication of National Bureau of Statistics, Abuja, Nigeria, Pp 1-31.
- Nindi, A.G. and Odhiambo, N.M. (2015). Poverty and Economic Growth in Swaziland: *An Empirical Investigation. Managing Global Transitions*, 13(1), 59–7.
- Norton, S. W. (2002). Economic Growth and Poverty: In Search of Trickle-Down. *Cato Journal*, 22(2), 263–275.
- Nwafor, M.; Ehor, E.C.; Chukwu, O.J. and Amuka, J.I. (2011). Cost-Effective Agriculture Growth Options for Poverty Reduction in Nigeria: Evidence and Policy Implications. AIAE Research Paper 6. African Institute for Applied Economics, Enugu.
- Obadan, M.I. (1997). Analytical framework for poverty reduction: Issues of economic growth versus other strategies. *Proceedings of the 1997 Annual Conference of the Nigerian Economic Society*, Ibadan.
- Obi, B.O. (2007). Fiscal policy and poverty alleviation: Some policy options for Nigeria. *African Economic Research Consortium, AERC Research Paper No.164*.

- Odhiambo, N. M. (2009). Finance-Growth-Poverty Nexus in South Africa; A Dynamic Causality Linkage. *Journal of Socio-Economics* 38(2), 320–325.
- Ogbeide, E. O. and Onyinyechi A. D. (2015). Poverty and Income Inequality in Nigeria: Any Causality? *Asian Economic and Financial Review*, 5(3), 439-452.
- Okoroafor, M. O. and Nwaeze, C. (2013). Poverty and Economic Growth in Nigeria. *A multidisciplinary journal of global macro trends, Macrotheme Review*, 2(6), 105-115.
- Olowa, O.W.; Awoyemi, T.T.; Shittu, A.M. and Omowunmi, A. (2013). Effects of Remittances on Poverty among Rural Households in Nigeria. *European Journal of Sustainable Development*, 2 (4), 263-284.
- Onanuga, A.T. and Shittu, A.M. (2010): Determinants of interest rates in Nigeria: An error correction model; *Journal of Economics and International Finance*, 2(12), pp. 261-271.
- Oyinbo, O. and Rekwot, G.Z. (2014). Agricultural Production and Economic Growth in Nigeria: Implication for Rural Poverty Alleviation, *Quarterly Journal of International Agriculture*, 53(3), 207-223.
- Ravallion, M. and Chen, S. (2003). ‘Measuring Pro – Poor Growth. *Economics Letters*, 78(1), 93 –99.
- SDGs (2019). High-level political forum on sustainable development, convened under the auspices of the Economic and Social Council. Special edition: progress towards the Sustainable Development Goals. 2019 session, 26 July 2018–24 July 2019, Agenda items 5 (a) and 6. <https://sustainabledevelopment.un.org/sdg1>
- Sembene, D. (2015). Poverty, Growth, and Inequality in Sub-Saharan Africa: Did the walk match the talk under the PRSP Approach? *International Monetary Fund (IMF) Working Paper*.
- Shittu, A.M. and Odine, A.I (2014). Agricultural Productivity Growth in Sub-Sahara Africa, 1990-2010: The Role of Investment, Governance and Trade. Paper presented at the 17<sup>th</sup> Annual conference on Global Economic Analysis, Dakar, Senegal, Pp 1-34.
- Thirtle, C.; Lin, L. and Piesse, J. (2003). The impact of researched agricultural productivity growth on poverty reduction in Africa, Asia and latin America. *World Development* 31, Pp 1959-1975.
- Thorbecke, E. (2013). ‘The Inter-relationship Linking Growth, Inequality and Poverty in Sub-Saharan Africa.’ *Journal of African Economies* 22(1),15–48.
- UNDP (2010). Human Development Report Nigeria 2008-2009. Achieving Growth with Equity. United Nations Development Programme.
- Von Braun, J.; Fan, S.; Meinzen-Dick, R.; Rosegrant, M.W.; and Pratt N.A. (2008). International Agricultural Research for Food Security, Poverty Reduction, and the Environment. What to Expect from Scaling Up CGIAR Investments and “Best Bet” Programs. IFPRI, Washington, D.C.
- World Bank (1996). Galloping Poverty in Nigeria; Sustainable Development in Africa, *World Bank Report* Vol. 12 No. 6.
- World Bank (2009). World development indicators online 2009. Available from <http://data.worldbank.org/indicator>.
- World Bank (2018). Decline of Global Extreme Poverty Continues but Has Slowed, World Bank Press Release of September 19, 2018. Retrieved from: <https://www.worldbank.org/en/news/press-release/2018/09/19/decline-of-global-extreme-poverty-continues-but-has-slowed-world-bank>.
- World Poverty Clock (2019): World Data Lab’s Poverty Clock. [www.worldpovert.io](http://www.worldpovert.io)