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EVIDENCE OF KUZNETS HYPOTHESIS IN ECONOMIC GROWTH ON POVERTY REDUCTION IN NIGERIA

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Abstract

This study investigated the causality between economic growth and poverty incidence in Nigeria and further determined empirically, any evidence of Kuznets hypothesis in Nigeria between 1980 and 2018. These were with a view to analyzing empirically the nexus between economic growth and poverty alleviation in Nigeria. Annual time series secondary data covering the period 1980 to 2018 were obtained from the World Development Indicators (WDI) published by the World Bank and Statistical Bulletin published by the Central Bank of Nigeria (CBN). Data collected were analyzed using Autoregressive Distribution Lag (ARDL) model (ECM). The ARDL approach is significant to this study because the underlying regressors are purely a mixture of I(0) and I(1) after pre-testing of variables. Pair-wise Granger Causality was used to check the direction of causality. The econometric analysis shows a unidirectional causal relationship, running from economic growth to poverty (0.0189) while the trickle-down effects of the Kuznet's hypothesis were not supported by Nigeria's data. The coefficient of GDP^2 was not statistically significant (t=0.24, P>0.05). The study concludes that placing so much premium on economic growth and the expectation of trickle-down effects as postulated by the kuznet's hypothesis of the neo-classical thought is inappropriate a policy prescription in Nigeria. Some direct interventionist approach remains a more viable option and government should actively pursue poverty alleviation with economic growth strategy within the framework of development planning.

Keywords: Evidence, Kuznets Hypothesis, Economic Growth, Poverty Reduction, Nigeria.

Introduction

In Nigeria, poverty is to be a major developmental issue particularly, its implication for economic growth. According to Anigbogu and Ndubuisi-Okolo (2019) the major aim of government is to fight and eradicate the high rate of poverty in Nigeria and as well as enhance well-being and sustain economic growth. Based on the survey of the National Bureau of Statistic (2018), more than two-third of Nigerians are living in absolute poverty. For instance poverty level in Nigeria in 1985 was 46.3 percent with total population of 75 million; poverty incidence in Nigeria stood at 65.6 percent by 1996. In 2000, poverty level rose to 68 percent and by the year 2018, poverty level rose to 75 percent with total population of 174 million. The behavior of poverty and economic growth in Nigeria is a cause for concern and attracts researchers' interest. According to Akinbode (2013), he described poverty in Nigeria as a plague and alarming; a puzzle considering the country's endowments in agriculture, petroleum, and human resources. These tables 1 & 2 below clearly show the wealth of the Nigerian economy and her progressive economic growth.

Table 1: Nigeria composition of exports (values in billions of naira)

Year	1985	1990	1995	2000	2005	2010	2015
Oil	11.22	106.63	927.57	1,920.90	7,140.58	11,300.52	6,184.48
Non - Oil	0,50	3.26	23.10	24.82	105.96	710.95	660.68
Total	11.72	109.89	950.66	1,945.72	7,246.53	12.011.48	8,845.16

Source: National Bureau of Statistics and Central Bank of Nigeria, (2018)

Table 2: Nigeria Nominal and real GDP growth, (1985 -2015)

Year	1985	1990	1995	2000	2005	2010	2015
Nominal GDP at market price (#billion)	2,247.78	5,195.16	28,719.62	57,757.02	166,506.1	344,549.9	525,444.8
Real GDP at market price (#billion)	5,484	6,130	5,422	5,494	7,330	9,056	10,162
Real growth rate	5.9	11.8	- 0.1	5.1	6.4	8.0	2.7

Source: National Bureau of Statistics and Central Bank of Nigeria, (2018)

Nigeria is endowed with human capital resources, agricultural resources, petroleum, oil and gas, solid mineral resources, among many others and alongside a progressive economic growth in terms of real GDP (Gangas, 2017). It is believed that the level of poverty in Nigeria should have significantly reduced considering the country earnings. The ideal situation is that growth should generate significant reduction in poverty, income and wealth inequality and unemployment (Jelilov, 2016). However, poverty is still at high rate in Nigeria and has constituted a menace to the overall performance of her economy and the standard of living of the citizen (Agbasi, Edoko and Ezeanolue, 2018).

The potential effect of economic growth on poverty rate is, either entirely or in part, by an increase in income inequality (Barro 2000). This assertion finds its root in the Kuznets' hypothesis (1955), positing that growth and inequality are related through an inverted "U" shaped function. According to Kuznets's inverted U hypothesis (1955), "in the earlier stages of development, primarily at middle-income levels, income inequality would grow until a turning point would have been reached, when the distribution of income would become more even again and poverty would rapidly disappear under the influence of the larger size of the cake and fairer distribution" (Dollar and Kraay, 2002). However, economic growth in the literature has been identified as prerequisite factor for poverty reduction, particularly when it leads to reduction in income inequality and reduction in unemployment (Ijaiya, Ijaiya, Bello, and Ajayi, 2011). Furthermore, Ijaiya, Ijaiya, Bello, and Ajayi, cited that attention is therefore to be concentrated on ensuring rapid economic growth as measured by growth in real GDP, even distribution of income and earnings, and reducing unemployment, among others which cumulates to poverty reduction.

In Nigeria, earnings and wealth are largely unevenly distributed (Ajibola, Loto, and Enilolobo, 2018). The high rate of poverty and income inequality in Nigeria has disrupted the overall performance of her economy. If sustainable growth and development is desired, the issues of poverty, income inequality, unemployment and human development cannot be totally ignored (Jelilov, 2016). However, Oyegoke and Wasiu (2018) conclude that economic growth and development of a nation cannot be meaningful without addressing the issues of poverty and income distribution. Government should reinforce their efforts on reducing income inequality (Bournguignon, 2003). Nations with increased poverty level and income inequality cannot benefit from economic growth in the long-run through the trickle-down effect (Piketty and Saez, 2003). Scholars like Melikhova and Jakub (2014) argued that the "trickle-down" theory must be supported by policies and programmes of financial inclusion that will reduce disparities in incomes and assets distribution.

Economic growth and poverty reduction in Nigeria has been an area of interest by policy makers and researchers. In spite of the government comprehensive national development plans and various efforts on poverty alleviation programmes and schemes, poverty situation in Nigeria has persisted and the standard of living of the citizens is not measuring up. Why is economic growth in Nigeria not instrumental to poverty reduction? In Nigeria the optimum question remains, do the poor benefit from economic growth? Thus, several scholars like McKey (2013); Nuruddeen and Ibrahim (2014); Nyasha, Gwenhure and Odhiambo (2017); Garzy-Rodriguez (2018); and Dwi, Abd-Majid, Aliasuddin and Kassim (2018) among others, have studied and investigated on the nexus between economic growth and poverty level, using different approaches (direct and indirect). After a thorough survey on the theoretical and empirical evidence on the nexus between economic growth and poverty alleviation in Nigeria; there are several shortcomings of previous empirical studies on the indirect approach to poverty alleviation. This approach places much emphasis on economic growth with the presumption of reducing poverty through the trickle down effects (Kuznets hypothesis), but failed to examine the interventionist approach to poverty alleviation and economic growth simultaneously. In the literature there is no empirical support for the trickle down effects of Kuznets hypothesis in Nigeria. Based on the above issues, it is important to know the feedback effect between economic growth and poverty level in Nigeria using the interventionist approach to poverty reduction and economic growth simultaneously and to determine if

economic data on economic growth and poverty incidence provide credence to kuznet's hypothesis in Nigeria for the period 1980 to 2018. Therefore, the objective of this study is to investigate the causal relationship between economic growth and poverty level; and also determine any evidence of Kuznet's hypothesis in Nigeria.

Literature Review

Poverty alleviation and sustainable economic growth is a multifaceted phenomenon and a multifaceted challenge facing virtually all country of the world today. There are different dimensions to the theory of economic growth on poverty reduction which raises theoretical and empirical issues and the need for clarification. There are two major views on nexus between economic growth and poverty reduction. These are the Neoclassical school and the Keynesian school. The Neoclassical schools proposed for free market system where the forces of demand and supply are all the determinate of development and growth and on the other hand, they explains that poverty is basically due to market failures of demand and supply notably and this market failures is beyond the individual control (Todaro 1997). The assumption by the neoclassical schools is that the economy is always at a full employment and if anybody is unemployed is by choice, because they are voluntarily unemployed and poor (Norton, 2002). Their expectation is that increase in economic growth should reduce poverty level and unemployment rate in the economy. According to Ijaiya's, Bello, and Ajayi (2011), poverty is mainly seen as a result of individual choices that affect productivity negatively.

The Keynes preposition brings to focus the macroeconomic forces and government roles, making sure that public goods are provided and also ensure stabilization of the economy (Todaro 1997).The concept of employment by the neo-classical schools is total dependent on "market supply and effective demand", which in turn leads to output, and output increases income earnings and availability of income creates opportunities and employment (Dollar and Kraay 2002). Keynesian approach to the concept remains that poverty is not voluntary; unemployment is the cause of poverty. This implies that people are poor because they are unemployed. Adekoya (2018) explained that poverty reduction can be achieved by focusing on rapid economic growth, income inequality, and declining unemployment. According to Aghion and Bolton (1997) Keynesians schools suggest that economic growth promote economic development and also reduces poverty. He further justify Keynes preposition that government intervention in the market system is very important and necessary. Government intervention is to tackle involuntary unemployment, income inequality and social inequality (Dollar and Kraay 2002). The Keynes schools of thought believe that government focusing on economic growth, there is the assumption about the trickle–down effect of growth on poverty. That is in the long-run the poor benefits from the higher economic growth in a country (Bourguignon 2004). Therefore, poverty reduction policies and programmes should be aimed at boosting economic growth (Aghion and Bolton 1997). The 'trickle-down theory' demonstrates that economic growth plays a vital role in poverty reduction in any given country, provided that the income distribution remains constant (Thorbecke, 2013).

The nexus on the relationship between growth and poverty has found expression in the Kuznets hypothesis (1955). Bourguignon (2004) proposed that income inequality and economic growth are related in the preposition of Kuznets hypothesis (an inverted U-shaped curve). At the initial stages of development and economic growth, income inequality tends to worsen until the point of threshold. In 1955, Kuznets published an article on "Economic

Growth and Income Inequality" on The American Economic Review. Kuznets was the first person to research on the idea of a link between income inequality and economic growth. In his study Kuznets's hypothesis states that "the income inequality initially rises with economic growth but after reaching its maximum it subsequently falls in advanced stages of economic development. Hence, the relationship between the income inequality and the average income expressed as GDP per capita has shape of inverted U-curve". Kuznets argued that in the early stages of economic growth, the rich accumulate more wealth than the poor. As a result, the income distribution in the early stage becomes more unevenly distributed (Melikhova and Jakub, 2014).

Since the establishment of Kuznets's hypothesis a number of scholars, have tried to explain the inverted U-curve relationship between the income inequality, the level of poverty and the level of economic growth. Piketty, Saez, andStantcheva (2014) uses industrialization to clarify the Kuznets's hypothesis U – shape curve, the idea was that income inequalities increases in the early phases of industrialization because only a minority benefits from the new wealth creation brought by the industrialization process. Later, in more advanced phases of growth and development, inequality automatically decreases as a larger and larger fraction of the population participates in the fruits of the economic growth. Aghion and Bolton (1997) attributed the Kuznets's hypothesis to support market imperfections which results to different behavior among the poor and the rich. In early stages of economic growth the rich get richer, while the poor remain poor, at later stages of economic growth the accumulation of wealth and income by the rich people pushes down their interest rates and allow the poor to become richer. Empirical research on the validity of Kuznets's hypothesis was performed by many authors, but the results obtained are controversial and inconclusive.

Several research works have been done on the empirical relationship between economic growth and poverty alleviation. McKay, (2013) found that economic growth has a significant impact on poverty alleviation in the short-run. He found a unidirectional causality running from economic growth to poverty reduction, which implies that economic growth does not have significant impact on poverty in the long-run. Nuruddeen and Ibrahim, (2014) and Nyasha, Gwenhure andOdhiambo (2017) have found a unidirectional causality running from poverty to economic growth and concluded that economic growth exhibited significant positive impact on poverty. To further analyze the relationship between economic growth and poverty alleviation (Ravallion 2010; Marinko andRomina, 2016) are of the opinion that for growth to have some meaningful impact on poverty, that growth must occur in sectors from which a large proportion of the poor derive their livelihood. Further, Marinko andRomina (2016) explained that the extent to which economic growth reduces poverty depends upon how poverty is measured, and the pace and pattern of the growth among different countries and different periods. Many studies were conducted to verify the theoretical postulation of Keynes relating to economic growth and poverty alleviation. Endogenous growth theory links economic growth through domestic saving and capital accumulation with poverty alleviation. For the case of Nigeria, Aigbokhan (2000) conducted a research on the relationship between poverty, inequality and economic growth in Nigeria for the period 1986 to 1996 and found a significant positive relationship between growth and poverty, meaning that the impressive growth of the economy from 1986 to 1992 made worse the level of poverty in the country. In his findings, he revealed that the so-called "trickle down" phenomenon (i.e. Kuznets's hypothesis), having the view that growth reduces poverty and inequality, is not supported by

Nigeria's data. Omoniyi (2018) examined the effect of poverty on economic growth in Nigeria, The study revealed a positive and significant relationship between inflation, life expectancy and economic growth, while investment proved insignificant. Conversely, poverty, corruption, debt, mortality, human capital development and unemployment presented negative relationships with economic growth. Corruption, life expectancy and mortality rate were significant, while poverty, debt, human capital development and unemployment proved insignificant. Corruption, inflation, life expectancy and mortality rate were the determinants of economic growth. Finally, the article further revealed that all the variables were determinants of poverty in Nigeria except corruption and human capital development.

Oyegoke andWasiu (2018) explored the effect of economic growth on poverty reduction in Nigeria using a time series data spanning from 1980-2016. Unit Root and Johansen Cointegration tests were carried out to determine stationarity and long-run relationship among the variables respectively, while the VAR was carried out to determine the effect of Government expenditure, unemployment growth rate and Real GDP on poverty incidence. The result showed that Government expenditure was positively related to poverty incidence. This suggests that the poor are not benefitting from the economy at large, especially from total government expenditure. The GDP coefficient (a proxy for economic growth) conforms to the a-priori expectation, which depicts a negative relationship between economic growth and poverty incidence, while unemployment relates positively to poverty reduction.Agbasi, Edoko, andEzeanole (2018) examined the impact of economic growth on poverty reduction in Nigeria using an econometric regression model of the Ordinary Least Square (OLS) to ascertain the effect and relationship in the country's poverty-growth nexus. Findings revealed that there is significant effect and relationship between poverty, unemployment, mortality rate, consumption and Gross Domestic Product (GDP) in Nigeria. Bakare and Ilemobayo (2013) in their empirical findings discover a direct relationship between economic growth and poverty in Nigeria, the study suggested that as economic growth increases poverty level increases. A high growth rate paved the way for a sustained and stable increase in productive capacity and employment opportunities (Aigbokhan 2000).

The relationship between economic growth and poverty reduction in Nigeria was explored empirically by Gangas, (2017). Secondary data spanning between 1980 and 2013 and the data was analyzed using the OLS (ordinary least square). The result indicated that the initial level of economic growth was not prone to poverty reduction, while an increase in economic growth was prone to poverty reduction, a situation that can only be sustained and improved upon if certain policy measures are put in place Poverty is what affects the majority of a population. Faloye&Bakare (2015) examined the impact of economic growth on poverty reduction in Nigeria using secondary data spanning from 1999 to 2014. Ordinary Least Squared (OLS) model was employed. Findings showed that economic growth has impact in reducing poverty. Stephen and Simeon (2013) conducted a research on economic growth and poverty in Nigeria using Ordinary Least Square (OLS), and Multiple Regression analysis. Data were subjected to unit root and co-integration tests to avoid non-stationarity that is associated with time series data. The results revealed that there was a positive and significant relationship between economic growth and poverty, which implied that economic growth does not reduce poverty.

Aye (2013) investigated the dynamic causal relationship between financial deepening, economic growth and poverty in Nigeria using annual time series spanning from 1960 to 2011. After subjecting data to unit root test, it was observed that all variables became stationary at I(1). So the study adopted Johansen cointegration test to establish the long-run relationship between finance, growth and poverty while Hsaio-Granger causality within a Vector Autoregressive (VAR) and Vector Error Correction Model (VECM) was applied to examine both the short and long-run causality between the variables under study. The findings showed that there existed a long run equilibrium relationship between finance, economic growth and poverty. Onyedikachi and Chinweoke (2013), examined the impact of poverty on the level of economic growth in Nigeria from 1990 to 2011. They adopted OLS to estimate a linear functional impact of poverty index on economic growth. They revealed a zero correlation between poverty index and economic growth in Nigeria.

Ijaiya's, Bello and Ajayi (2017), investigated an empirical study on economic growth and poverty reduction, in Nigeria. A functional relationship was established between poverty reduction as endogenous variable and economic growth as exogenous variable using ordinary Least Square Analysis to estimate the coefficient of the parameters. Results showed that initial level of economic growth had no impact in poverty reduction whereas a positive change in economic growth caused poverty reduction. Kolawole, Omobitan and Yaqub (2015), examined the relationship among poverty, inequality and economic growth in Nigeria using time series data spanning from 1980 to 2012. Ordinary Least Square and error correction mechanism (ECM) were adopted. The data were exposed to unit root test, cointegration test using Johansen approach. GDP growth rate, per capita income, literacy rate, government expenditure on education, and government expenditure on health were used as variables. The study suggested that GDP should be boosted and that government investment on education and health infrastructure should be increased, the level of income inequality should be reduced and along-side poverty alleviation programmes should be put in place to reduce poverty in Nigeria. Empirical works of selected authors were reviewed in the literature to examine the impact of human development index on poverty reduction in Nigeria. One of such author was Chikelu (2016) who used OLS and co-integration methods to examine the impact of human development index on poverty reduction in the Nigerian economy from the period 1986 to 2012. The results showed that long run relationship existed between poverty rate as the dependent variable and the four explanatory variables (primary school enrolment, secondary school enrolment, tertiary school enrolment and per capita income). In Nigeria, where the incidence of poverty has remained high in spite of growth and the existence of number of poverty-related programs, targeted efforts are required to induce broad-based growth and provide social service and infrastructures aimed at reducing the depth and severity of poverty across the country (Gangas, 2017).

Methodology

This research is focused on the Keynesian model; the Keynesian school of thoughts brings to a focus macroeconomic forces and the role of government in ensuring and providing economic stabilization and public goods (Thorbecke, 2013). The importance assigned to the functions of the government by the Keynesian allows for a greater focus on public goods and inequality. For example, a more equal income distribution can facilitate the participation of disadvantaged groups of society in the type of activities that can reduce the rates of poverty (Fosu, 2010). Keynes believes that people are poor because of poor human capital

development, uneven distribution of income and wealth of the nation. He postulated that poverty is as a result of poor public sector investment and that poverty is involuntary. This theoretical framework is motivated by the endogenous economic growth theory as explained by McKinnon (1973) and Shaw (1973) on the theoretical linkage among finance, growth and poverty. They explained the channel through which economic growth transcend into poverty reduction. McKinnon Condit effect describes the mechanism through which poor people benefit directly from formal financial intermediation by widening access to financial services providing employment opportunities, making loans and credits available to the poor for investment, which will result to an increase in output from where poverty could be reduced. This theory linked financial development, through domestic saving, investment, and capital accumulation, with economic growth.

Model Specification

To specify the model, emphasis is placed on whether the country's economic growth has any significant influence on poverty reduction in Nigeria and vice-versa. And in addition, investigates any evidence of Kuznets's hypothesis in Nigeria along with other relevant macroeconomic variables. Thus, the model that explains the nexus the nexus between economic growth and poverty is specified below:

$POVR_t = f(RGDP_t)$ ……. 3.2.1

Where, $POVR_t$ represents poverty reduction at time t and RGDP is the level of economic growth at time t.

Furthermore to keep the model simple, this study used some selected variables which are of economic relevance to this study. These variables served as indicators or measures of growth and poverty. It is often said in the literature that an analysis of economic growth and poverty is not complete without accounting for income inequality, the rate of unemployment and human capital development. Therefore, unemployment rate, income inequality and human development index are included in model as control variable. By incorporating these variables, we have:

$POVR_t = f(RGDP_t, GINI_t, UNMR_t, HDI_t)$ ……. 3.2.2

Where, $GINI_t$ is the income inequality at time t, $UNMR_t$ is the rate of unemployment at time t, and HDI_t represents human development index at time t.

Furthermore, emphasis is placed on whether the country's economic growth has any significant influence on poverty reduction in Nigeria. To specify this model, the log-linear form of equation 3.2.2 is expressed as follows:

$$InPOVR_t = \alpha + \beta InRGDP_t + \Omega InGINI_t + \gamma InUNMR_t + \varsigma InHDI_t + \psi$$ ……. 3.2.3

Where, ψ is the error term or white noise in its characteristics, α is the intercept, and β, λ, γ and ς represent the parameter estimates.

Estimation Techniques

This study employed the Autoregressive Distributed Lag (ARDL) model to establish the relationship between economic growth and poverty alleviation. The problem of endogeneity, reverse causality and non-stationarity of variables can be partly solved by developing a dynamic framework. The fundamental importance of this model is that we can simultaneously discuss long-run and short-run relationship within the same framework regardless of whether the variable are integrated of the same order or not, that is, whether all variables are I(1) or I(0) or the combination of I(1) and I(0) variables. From equation 3.23 the autoregressive distributed lag model is obtained thus:

$$InPOVR_t = \alpha\ \beta InRGDP_t + \Omega InGINI_t + \gamma InUNMR_t + \varsigma InHDI_t + \lambda_1 InPOVR_{t-1} + \lambda_2 InRGDP_{t-1} + \lambda_3 InGINI_{t-1} + \lambda_4 InUNMR_{t-1} + \lambda_5 InHDI_{t-1} + \mu_t \quad \ldots\ldots\ldots\

Nigeria (CBN) Statistical bulletin publication, 2018 edition; while income inequality and human development index were sourced from World Development Indicator (WDI), 2018.

Descriptive Statistics

The result in Table 3 show that the mean and median values lie within their maximum and minimum values for all the variables, which indicate a good level of consistency in the data series. Hence, the Jaque-Bera test of normality which ranges between 0.521872 and 7.118974 levels of significance can still be accepted. Table 3 shows that the mean and median of the variable in the data set (poverty index (POVR), Gross Domestic Product (GDP), GINI Index (GINI), unemployment (UNMR), and Human Development Index (HDI) displayed a high level of consistency as their mean and median values are perpetually within the minimum and the maximum values of these series. The mean POVR over the period of study is 55.96 which is higher than the median figure of 55.40. This signifies that POVR is slightly skewed to the right, the implication of which is that some of the variables in the data series have median that are lower than the mean.

Table 3: Descriptive Statistics

	POVR	**GDP**	**GINI**	**UNMR**	**HDI**
MEAN	55.96	7,031.51	44.71	15.31	39.20
MEDIAN	55.40	6,283.00	43.70	12.70	39.20
MAXIMUM	65.60	1,0170.00	54.70	30.60	53.40
MINIMUM	39.80	5,298.00	38.70	7.10	21.90
STD.DEV	5.57	1,695.22	4.21	6.90	10.47
SKEWNESS	-0.70	0.63	0.52	0.73	-0.19
KURTOSIS	3.96	1.84	2.36	2.26	1.63
JARQUE-BERA	4.64	4.78	2.40	4.34	3.30
PROBABILITY	0.10	0.09	0.30	0.11	0.19
SUM	2,182.300	2,74229.0	1,743.600	596.9000	1,528.800

Source: Authors compilation 2020 based on available data

Unit Root Test

The result of the unit roots are presented in Table 4 using the Augmented Dickey Fuller (ADF) technique. The result shows that all of the data series are stationary at first difference I(1) at 5% level of significance with intercept alone and with intercept and trend, but LUNMR became stationary at levels I(0) at 5% level of significance. While, the result of the unit roots presented in table 4 using Phillips-Perron shows that LPOVR, LGDP and LHDI data series are stationary at levels I(0) at 5% level of significance with intercept alone and with intercept and trend, but LUNMR and LGINI became stationary at first difference I(1) at 5% level of significance. With these results, Autoregressive Distributed Lag (ARDL) and Vector Autoregressive (VAR) model are appropriate as stated by (Engle and Granger, 1987). But, this study used Autoregressive distributed lag (ARDL) Model to check for causality among variables.

Table 4: Unit Root Tests Results using Augmented Dickey Fuller (ADF) and Phillips-Perron Technique

Augmented Dickey-Fuller (ADF)				Phillips-Perron (PP)		
Variable	level	first Diff	Status	Level	First Diff	Status
LPOVR	-2.30	-3.02*	I(1)	-3.11*	-2.97	I(0)
LGDP	-2.26	-4.20*	I(1)	-3.83*	-4.23	I(0)
LUNMR	-3.63*	-3.97	I(0)	-0.52-3.13*		I(1)
LHDI	-0.06	-5.33*	I(1)	-3.56*	-5.43	I(0)
LGINI	-2.10	-3.39*	I(1)	-0.80-3.46*		I(1)

Note: * implies 5% level of significance

Source: Author's computation 2020 based on available data from CBN and WDI

Causality between Poverty Reduction and Economic Growth

Table 5 shows the result of the Pairwise Granger causality test where LGDP granger causes LPOVR in the long-run with the probability value of 0.0189 which is significant at 5% level. Therefore, we reject the null hypothesis of LGDP does not Granger cause LPOVR and we accept the alternative hypothesis of LGDP Granger cause LPOVR. But, we do not reject the null hypothesis of LPOVR does not granger cause LGDP with the probability value of 0.3832 at 5% significance level. The result indicates that there is a unidirectional causality relationship running from LGDP to LPOVR at 5% significance level, while no causality relationship exists from LPOVR to LGDP. This result suggests that poverty is not affected by the increase in the economic growth level but economic growth is affected by the level of poverty in Nigeria. This implies that an increase in poverty incidence results to a reduction in the level of economic growth in the long-run, while economic growth does not have any significant impact on poverty in the long-run in Nigeria.

Table 5: Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
LGDP does not Granger Cause LPOVR	37	4.50254	0.0189
LPOVR does not Granger Cause LGDP		0.98840	0.3832
LGINI does not Granger Cause LPOVR	37	1.93118	0.0415
LPOVR does not Granger Cause LGINI		2.11287	0.0374

Source: Author's computation 2020

Long-Run Equilibrium Relationship

In order to apply the ARDL bounds testing approach, it is important to identify an appropriate lag length to calculate the F-statistic since the ARDL model is sensitive to the lag order. In addition, optimum lag order would be helpful in reliable and consistent result in the analysis. According to Pesaran et al. (2001), with the lag of order 2, the I(0) bound and I(1) values at 5% level of significance are 2.86 and 4.01 respectively. Therefore, it is right to conclude that the computed value of F-statistic (12.00) is greater than both the values of I(0) bound and I(1) at 5% and 10% levels of significance. This helps to reject the null hypothesis of no long-run relationship. Thus, there is a long-run relationship among the variables.

Table 6: Long-Run Relationship

Test Statistic	Value	K
F-statistic	12.00	5
Critical Value Bounds		
Significance	I(0)	I(1)
5%	2.86	4.01

Source: Author's Computation 2020 Based on available data

Table 7: Long-run Coefficients of ARDL Model (1, 1, 0, 2, 0) Dependent Variable: POVR

VARIABLE	COEFFICIENT	Std. Error	t-statistic	Prob.
LGGDP	0.18	0.21	0.83	0.41
LGINI	1.04	0.15	6.81	0.00*
LUNMR	0.11	0.15	0.76	0.45
LHDI	-0.40	0.21	-1.91	0.04*

Note: * 5% level of significance.
Source: Author's computation 2020 based on available data.

Table 7 displayed the long-run impacts of POVR to the explanatory variables (GDP, GINI, UNMR, and HDI) in Nigeria which are much more important in this study. From the result, it is evident that LGINI and LHDI whose coefficients are 1.04 and –0.40 respectively and significant at 5% level that have a long-run causal relationship with POVR. While LGDP and LUNMR with coefficients are 0.18 and 0.11 respectively but not significant at 5% level, they do not exhibit long-run causal relationship. The result showed that there is no long-run relationship between economic growth (LGDP) and poverty reduction. This is not in consonance with the apriori expectation, it is expected that an increase in the growth level of the economy in the long should result to a decrease in poverty rate as stated in the previous chapter. But, in the case of Nigeria, as observed from this study, there is no impact on poverty reduction in the long-run. This could further explain the rising poverty level in Nigeria, despite Nigeria's abundant Agricultural resources, economic resources and oil wealth. This explains why the rapid economic growths in Nigeria are not instrumental in poverty reduction. As earlier stated in the previous chapter, successive government have made concerted efforts through one form of poverty reduction programme or the other to tackle poverty, but little or no impact has been achieved going by the result in Nigeria.

The long-run causal relationship for this model is computed from the t-statistic of Error Correction Mechanism (ECM). Looking at Table 8, it is evident that the model has -0.22 long-run reversion to equilibrium and its significant at 1% level. Therefore, we can infer a long-run causal relationship; this implies that the reversion to equilibrium is at an adjustment speed of 22%. The adjustment process is weak, meaning that the economy will recover about 22% within a year after disequilibrium.

Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.054834	0.009215	-5.950521	0.0000
D(LGDP)	0.164928	0.054016	3.053308	0.0049
D(LUNMR)	-0.009661	0.035176	-0.274644	0.7856
D(LUNMR(-1))	-0.165682	0.035598	-4.654227	0.0001
CointEq(-1)*	-0.223469	0.026997	-8.277586	0.0000

Table 8: ECM Regression
R^2 = 0.832026, Adjusted R^2 = 0.811029, F-Statistic = 39.62639 Prob(f-statistic) 0.000000, Durbin-Watson Stat 1.964529
Source: Author's computation 2020 based on available data.

Having examined the empirical relationship between the variables, we discovered that there is a unidirectional causal relationship running from economic growth to poverty and that economic growth is directly related to poverty. This implies that an increase in economic growth in Nigeria for the period increases the poverty incidence in the country. This result does not conform to the a-priori expectation. The result is at variance with the classical theory of welfare that "wealth or income is a function of output". In the case of Nigeria, the result shows that, even if output expands, it does not reduce poverty incidence in the country. This implies that the poor are not benefitting from the economy at large, especially when there is uneven distribution of wealth and income. Most scholars have earlier asserted that economic growth bears no significant relationship with poverty in Nigeria (see Aigbokhan 2000; Stephen and Simeon 2013; and Gangas 2017). This study discovers that while Gross Domestic Product was growing, poverty and inequality situation in Nigeria did not improve, instead, income distribution worsened. These findings reject the trickle-down theory that growth will improve overall welfare and inequality with time as postulated by the neo-classical school. Considering the unemployment coefficient, it's well fitted with the a-priori expectation, indicating a positive relationship between poverty and unemployment. This is also in line with the Keynesian school of thought, that unemployment is involuntary, and that the poor are not poor by choice, but by lack of jobs. The result is also similar to that of Hassan (2012).

The relationship between income inequality and economic growth proxied by GDP found a bi-directional causality running from income inequality to poverty and vice-versa. These results suggest that poverty incidence is affected by income inequality. This means that an increase in the level of income inequality in Nigeria also leads to increase in poverty level. Thus, uneven distribution of wealth, assets and income in the country to a large extent contribute to the high level of poverty in Nigeria. This relationship has no indication of inverted U-curve shape because the result in table 9 and 10 shows a linear relationship. This study result revealed that the so-called "trickle down" of the Kuznets hypothesis, is not supported by Nigeria's data. This is as a result of low income level, high unemployment rate, poor education, and poor health facilities and unable to meet the demand of the general basic needs in the country; the savings cultures of people have reduced which in turn affect investment.

Table 9: Dependent Variable: LGINI

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.212160	21.30281	0.244670	0.8081
LGDP	-1.046852	4.754698	-0.220172	0.8270
LGDP^2	0.064431	0.267727	0.240660	0.8112
LPOVR	0.696716	0.088530	7.869841	0.0000

R^2 = 0.770688, Adjusted R^2 = 0751032, F-Statistic 39.21009, Prob(F-statistic) = 0.000000, Durbin-Watson stat = 1.520943
Source: Author's compilation 2020 based on available data.

Table 5.1: Dependent Variable: LPOVR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	-10.17676	5.180647	-1.964380	0.0575
LGDP^2	0.569049	0.291977	1.948954	0.0594
LGINI	0.917061	0.116528	7.869841	0.0000
C	46.00160	23.19250	1.983468	0.0552

Source: Author's compilation 2020 based on available data.

After investigating the evidence of Kuznets hypothesis in Nigeria for the period 1980 to 2018, this result shows that as the economy experiences economic growth and development, income inequality and poverty continues to rise and never falls after a certain period as predicted by Kuznets. Hence, the relationship between the income inequality and the economic growth expressed as GDP has no indication of inverted U-curve shape in Nigeria. The result in Table 5.18 shows a linear relationship of (t = 0.22, P> 0.05) but the quadratic parametric (GDP^2) that indicates that the inverted U – curve shape is not statistically significant. This study result obtained revealed that the "trickle down" phenomenon of Kuznets's is not supported by Nigeria's data.

By the evidence in this study, there is no empirical support for the Kuznets' hypothesis. The explanation is not farfetched considering saving habit and culture in most African countries including Nigeria. As argued by Umo, the middle class in African countries are generally much more disposed to serving status-oriented consumption needs (Umo, 2012.p.9), implying little or no savings. And so, increased investment-induced growth implied in the Kuznets' hypothesis may not be forth coming. Furthermore, the patience required of the masses for the trickling-down grow to materialize may not be there in a country Nigeria. As a matter of fact, the likely socio-political crisis could be counterproductive for an extended period of waiting for poverty alleviation. This boils down to the dethronement of the neo-classical prescription of indirect approach to poverty alleviation. Rather, the argument in this study only provides justification for interventionist approach of government – a direct approach that brings to the fore the relevance of poverty alleviation with growth strategy (Oladeji and Abiola, 2000).

Conclusion and Recommendations

Based on the results of the analysis, the study therefore concludes that poverty alleviation programmes and policies through an indirect approach that place much premium on economic growth with the presumption of reducing poverty through the trickle down effects in the long – run is not relevant in Nigeria. Economic growth is not a vital and strong tool for poverty reduction in Nigeria. However, the real growth rate in the country is moderately high and positive. The relationship between the income inequality, poverty incidence and economic growth has no indication of inverted U-curve shape and not supported by Nigeria's data. The coefficient of unemployment also reveals a positive relationship between unemployment and poverty indices in Nigeria. It implies that if unemployment keeps increasing, poverty incidence will also increase. Likewise, income inequality reveals a positive relationship with poverty incidence. However, the economic output / growth for the period under review indicating positive relationship shows that economic growth is not sufficient to reduced poverty in Nigeria. This disparity, however, raises a lot of concerns for policymakers about the poor and the country at large.

Based on these findings, the following recommendations are therefore made:

1. For poverty alleviation policies and programmes to yield effective result in Nigeria, government should simultaneously plan for economic growth and poverty reduction. These plans and policies should be institutionalized; it should be made a part of the country's constitution.
2. For poverty to be significantly reduced, or managed as the case may be, the government should improve on income distribution by reducing income inequality. For example, government should charge the high-income groups (the rich) by a progressive income tax, with the intent of narrowing income inequality. At the same time, high benefits and welfares are provided to low-income groups (the poor). This will help to improve the problem of income inequality.
3. Economic growth approach and government spending should be directed at the poor, mostly by providing the basic amenities, especially good infrastructures, financial benefits and aids to families with dependent children, and old people.
4. Both the formal and informal sectors should be enriched and enlarged, thereby affecting their growth and expanding the businesses; hence, more people will be employed and economically engaged, and poverty level will reduce. This can be done through loans, grants, equity and financial aids to rescue collapsed or vulnerable businesses.

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