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Does Economic Growth Reduce Poverty in Nigeria?

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Abstract
It is worrisome to discover that Nigeria is characterized by high rates of poverty in spite of increase in the growth rate of the economy in recent times and the huge revenues derived from oil. This paradox provoked this study. The study however examined the existence of significant relationship between economic growth and poverty in Nigeria if any. It provided an empirical answer to the startling question: Does Economic growth reduces poverty in Nigeria? The paper employed standard econometric method, Ordinary Least Square multiple regression, (OLS) to determine the relationship. The time series secondary data were screened using stationarity and co integration tests. The data were found to be stationary and co-integrated. The Empirical findings demonstrated a significant and direct relationship between economic growth and poverty in Nigeria. This implies that economic growth rate does not reduce poverty in Nigeria. In other words, the impressive growth of the economy in recent times could not yield an improvement in poverty. The so-called "trickle down" phenomenon, underlying the view that growth improves poverty is not supported by Nigeria's data. The findings and the conclusion of the study suggested the need for the policy makers to ensure equitable distribution and allocation of the national income. In the light of this suggestion, the policy makers should evaluate the pattern of public expenditures and ensure that they are properly harnessed to favour the poor. With the widely acknowledged encouraging relationship between literacy rate and poverty, this study suggested that there is need to strive to achieve a higher literacy rate in Nigeria.
Keywords: Economic growth, poverty, literacy rate, public expenditures and income distribution, Nigeria.

1 Introduction.

Nigeria ranks number 151 in the 2004 Human Development Index. The index places the country among the 26 poorest countries in the world. According to the report, the proportion of Nigerians living below the poverty line of one dollar a day has increased dramatically during the last two decades. In the year 2000, the statistics show that more than 70% of Nigerians were estimated to be living below the internationally defined poverty line of one dollar a day. World Bank in year 1995 found that a whooping 71% of Nigerians still live below the poverty line of less than £1/day (World Bank 1995) a situation which Human Development Index regarded as poverty trap. A country is classified to be poverty trapped if greater percentage of its population lives below the poverty line (Aigbokhan 2000). The report further indicated that both per capita income and per capita private consumption were lower than the early 1970s. Per capita income fell from $1,600 in 1980 to $290 in 2002. This is due to, among others, neglect of the agriculture sector, depreciation of the naira and economic mismanagement by the military governments. To-date the average GDP per capita has oscillated between US $ 355 and 387. Almost 90% of Nigeria's poor are engaged in agriculture, while 58% of the urban population is living in poverty. Past poverty reduction programs, including the Family Economic Advancement Program, had a marginal impact on poverty, despite large budgetary allocations. These programs failed to achieve their objectives because of poor design which is a reflection of the inadequate capacity that existed. The current government rolling plan, the NEEDS was aimed at reducing the level of poverty from 70% to 35% by 2010. Despite all these, the level of poverty continues to be on the increase.

It is however worrisome to discover that Nigerians continue to wallow in abject poverty despite the huge revenues from oil. Basically, the determinants of poverty are the combinations of several complex socio-economic factors. They include rural and urban unemployment, low productivity, inappropriate macroeconomic policies, deficiencies in the labor market resulting in limited job growth, low wages in the informal sector, and a lag in human resources development. Other factors which have contributed to a decline in living standard and are structural causes or determinants of poverty include increase in crime and violence, corruption, environmental degradation, retrenchment of workers, a fall in the real value of safety nets and changes in family structures. Poverty is considered a waste to any nation because it depresses the level of output in a country. Nigeria is however characterized by high rates of poverty in spite of increase in the growth rate of gross domestic product in recent times. This paradox forms the background for this study.

1.1 *Statement of the problem and objective of the study.*

There are divergent views on the impact of economic growth on poverty. Critics have argued that economic growth which is supposed to be a stimulus to poverty reduction has contributed to even worse economic and social outcome, only exacerbating the conditions that lead to poverty and vulnerability. Some

argued that the output growth are indeed the key to promoting living standard and reducing poverty, while others maintained that economic growth has not been directly contributing to the poverty reduction in so many developing countries (Sahn and Younger 2001;Aigbokhan 2000). This study clarifies the extent and magnitude of the relationship between economic growth on poverty in Nigeria.

Needless to say, the issue of poverty in Nigeria is a paradox. It is a case of poverty in the midst of plenty. Updated statistics indicates that about 70 percent of Nigerians currently live below the poverty line of N150 per day. The data also shows that those in the core poverty bracket in urban areas had risen from 25.2 percent to 43 percent in in recent times, while those in the core poverty bracket in the rural areas also rose from 31.6 percent to over 50 percent. Thus, with the improvement in growth rate of gross domestic product, poverty appears to be increasing while social indicators (life expectancy, child mortality and primary school enrolment) have shown negative trends in the current period. It is however instructive to carry out an empirical study on the exact relationship between growth and poverty in Nigeria. The paper addresses the following questions:

- What has been the nature and extent of poverty in Nigeria?
- Does economic growth reduces poverty in Nigeria?

The rest of the paper is organized as follows: Section 2 reviews the literature. Section 3 presents the theoretical framework and methodology, and Section 4 discusses the empirical results. Section 5 contains the summary and conclusions.

2 Literature Review

The issue of economic growth and poverty seems to attract little attention in the literature but then the few empirical results remains inconclusive. Researchers obtained quite different results depending on the period they chose for their analysis, and particularly the methodology used for the empirical studies (Bardhan 1973; Vaidyanathan 1974; Ahluwalia 1978; Gaiha 1989; Ghose 1989; Griffin and Ghose 1979; Saith 1981, Ravallion and Datt 1995; Ninan 1994). Many studies that have tried to analyze the relationship between growth and poverty have focused primarily on the question of whether or not economic growth trickles down to poor through its indirect effects on income and employment opportunities. With few exceptions (Bardhan 1973; Griffin and Ghose 1979), most of these studies have found an inverse relationship between growth and the incidence of poverty while some others have found positive relationship. For example, Sarris (1996), examined the effects of various macroeconomic variables including growth, devaluation, public investment spending financed by a corresponding reduction in public current expenditure and a reduction in public sector employment for Tanzania. All shocks result in short-term declines in real income for rich and poor alike. But in the longer term, the increase in output growth rates trickles down positively for both the poor and middle-income households. On the other hand, Aigbokhan (2000) carried out an empirical study on the relationship among poverty, inequality and economic growth in Nigeria for the period 1986 to 1996 and found a significant and positive relationship between growth and poverty meaning that the impressive growth of the economy in 1986-1992 could not yield an improvement in poverty. His findings suggests that the so-called “trickle down” phenomenon, underlying the view that growth improves poverty and inequality, is not supported by Nigeria’s data. This may well be due to the nature of growth pursued and the macroeconomic policies that underlie it and perhaps that the growth is driven by the oil and mining sectors. A further empirical study is therefore required to bridge the gaps between year 2000 when Aigbokhan concluded his research and now. A number of structural changes must have taken place since the period of his research which may have otherwise trickled down poverty. The study shall update the implications of economic growth on poverty in Nigeria.

2.1 *The Profile of Poverty and Growth in Nigeria*

According to the macro economic indicator in Table 1, poverty in Nigeria which was 27.2 percent 1n 1980 rose marginally to 28.0 percent in 1981.This rate declined to 27.5 percent in 1982 and rose sharply to 46 percent in 1985. The poverty declined marginally to 45 Percent in 1986 but increased sharply to 65 percent in 1996. It fluctuated between 62 and 66 percent during the periods of 1996 and 2001.The rate dropped again to 53 percent in 2002 and remained stable at an average of 54 percent over the periods of 2002 and 2007. In these poverty changes, the growth rate has not been correlated. The GDP growth rate in Nigeria increased sharply over the periods of 1987 to 1990, averaging 3.1 over the period of 1991 to 2000 irrespective of the poverty level. For instance, poverty increased steadily over these periods when the economy was growing. More importantly, it is clear from the Table 1 that there is positive correlation between poverty and economic growth. While the economy was growing, poverty was also growing.

Thus, growth had practically no effect on poverty in Nigeria during the period under review. This is only a preliminary result, however, since we are going to carry out parsimonious regression analysis in terms of the homogeneity proposal made about the relationship between poverty and growth. It can be shown that if the poverty is treated as dependent variable and growth as the independent variables then this will imply that the elasticity of the poverty with respect to changes in growth can be determined empirically. Hence, since the

poverty rate did change in the same direction as growth, the relationship between poverty and growth will be examined on sign and size of the regression parameter and coefficient. Despite this caveat, the observed relationship between poverty and growth are worth noting. In particular, the observations suggest that when the poverty is a varying proportion of mean national income, changes in Gross Domestic Product (GDP) would not be important determinants of poverty.

Table1: Macro Economic Indicators.

YEAR	POV growth RATE	UNEM at RATE	Literacy rate	GDP Growth rate
1980	27.2	5.3	5.0485	0.10
1981	28.0	4.8	5.1085	0.10
1982	27.5	5.4	5.2360	6.67
1983	29.0	5.2	5.0885	20.00
1984	30.0	6.2	5.2928	-5.1
1985	46.3	5.9	5.5552	9.4
1986	45.2	5.3	5.5710	3.1
1987	46.4	7.1	5.4161	-0.5
1988	47.2	5.3	7.2853	9.9
1989	43.3	4.4	8.0102	7.4
1990	44.2	3.5	7.7843	8.2
1991	43.9	3.1	7.1359	4.7
1992	42.7	3.4	5.6743	3.0
1993	46.3	2.7	9.0918	2.7
1994	45.9	2.0	8.9069	1.3
1995	50.8	1.8	9.1846	2.2
1996	65.6	3.2	9.3497	3.4
1997	64.9	3.2	9.6059	2.9
1998	66.3	3.2	9.5170	2.6
1999	63.5	3.0	10.683	2.8
2000	64.2	4.7	10.967	3.8
2001	62.5	3.6	10.593	4.6
2002	53.4	2.5	11.296	3.5
2003	55.2	2.9	11.078	10.2
2004	54.4	2.8	11.245	6.6
2005	55.5	3.3	11.324	6.5
2006	56.6	3.5	11.377	6.0
2007	58.6	4.1	11.585	6.5
2008	60.1	4.3	12.007	6.4

Source: CBN Statistical Bulletin 2008
CBN Annual Report 2000 – 2008
National Bureau of Statistics Issue

3 METHOD AND MATERIALS

3.1 *THE MODEL*

This study adopted the poverty index model proposed by Foster et al. (1984) with modifications. Foster et al. (1984) proposed a family of poverty indexes, based on a single formula, capable of incorporating any factor that affects
poverty through the "poverty aversion" parameter, α.

$$P\alpha = \frac{1}{N z} \sum (Z - yi)^{\alpha} \quad \ldots\ldots 1$$

Where Pα is a measure of poverty or the poverty gap index, z is the poverty line, N is the total sample population, yi is the income of the ith household, and α is the aversion parameter, which takes the values 0, 1 and

2, depending on the degree of concern about poverty. The quantity in parentheses is the proportionate shortfall of income below the line. By increasing the value of α, the "aversion" to poverty as measured by the index is increased. For example, where there is no aversion to poverty, $\alpha = 0$. If the degree of aversion to poverty is increased, so that $\alpha = 1$, the index becomes the head-count ratio which is multiplied by the income gap between the average poor person and the line. This index measures the depth of poverty; it is also referred to as "income gap" or "poverty gap" measure. This study uses the P-alpha index discussed above to investigate the relative impact of economic growth and other relevant variables that trickle down poverty or increases it. If we incorporate such variables we can write a poverty function as

$POV_t=F(\ GDPGR, UMPR, LITR)$ …….(2)

Where POV_t= Observed Level of Poverty

$GDPGR_t$ = Economic Growth Rate

$UMPR_t$= Unemployment Rate

$LITR_t$ = Literacy Rate.

t' = time subscript.

Equation 2 could be expressed in a linear form as

$POV_t = \beta_0 + \beta_1 GDP_t + \beta_2 UMP_t + \beta_3 LITR_t$ 3

Econometrically, to include random term, the model is expressed as:

$POV_t = \beta_0 + \beta_1 GDP_t + \beta_2 UMP_t + \beta_3 LITR_t + \mu_t$ ……4

Where μ_t = Error Term.

A *priori* $\beta_1<0, \beta_2>0, \beta_3<0$.

This model implies that poverty in Nigeria is expected to be negatively or positively related to gross domestic output, unemployment rate and literacy rate

3.1.2 *The Data*

Secondary data were used for this study. The data were obtained from the publications of the Central Bank of Nigeria, African Development Indicators, website, Journals and Newspapers. The data collected are: poverty rate, gross domestic output, unemployment rate and literacy rate. The data analysis consists of three main steps. First, the Phillips-Perron (PP) tests of stationarity (1988). Second is the Johansen test of coin-integration (1988, 1991) and third, the error correction mechanism analysis. The empirical study uses a simulation approach to investigate the theoretical relationship between industrial output and investment climate. The secondary data were processed using E-view for windows econometric packages. The E-view is preferred to SSPS because it enables us to correct the serial correlation in the data. The study employs Error Correction Mechanism (ECM) to overcome the problem of spurious regression. The ECM reveals that the change on a variable, at times, is not only dependent on the variable, but also on its own lagged changes. This enables us to induce flexibility by explaining the short run and long run dynamics in a unified manner.

3.1.3 A *priori* Expectations

The parameters for estimation from equation 4 are: β1, β2 and β3. In consonance with economic theory, it is expected that the level economic growth performance, unemployment, and literacy rate to a large extent determined the level of poverty. An increase in gross domestic output is expected to improve the per capita income and consequently trickle down the level of poverty. Thus we expect an inverse relationship between poverty and economic growth. On the other hand an increase in the rate of unemployment is expected to raise the level of poverty. We thus expect a positive relationship between poverty and unemployment. Finally, an increase in literacy rate is expected to improve productivity and consequently trickle down the level of poverty. Thus we expect an inverse relationship between poverty and literacy rate.

4 DATA ANALYSIS AND DISCUSSIONS

4.1 *Test of Unit Root*

A stationary time series with no deterministic component has an Autoregressive Moving Average (ARMA) representation that can be approximated by a finite process. Thus Non-stationary of time series data has often been regarded as a problem in empirical analysis. Working with non-stationary variables leads to spurious regression results from which further investigation is meaningless. The first step to be taken is to test for the stationarity of the variables. The Augmented Dickey Fuller (ADF) tests were used to test the stationarity of the time series data and the results are as follows:

- **TABLE 2: Analyses Of The Unit Root Test**

Variables	Test Statistic	5% critical value	Level	S/NS
POV_t	/4.954412/	/2.976263/	1(1)	S
$UNEMP_t$	/5.943411/	/2.976263/	1(1)	S
$GDPGR_t$	/5.343337/	/2.971853/	1(0)	S
$LITR_t$	/3.104300/	/2.971853/	1(0)	S

Source: Researcher's Computation

From the table 1, we infered that economic growth rate and literacy rate were stationary at level i.e., 1(0), since the t-statistics are greater than the critical values at 5% level of significace in absolute term. while other variables; poverty and unemployment were stationary after the first difference. i.e. 1(1)

4.1.2 *Test for Co-Integration*

Here, we test whether the regression residuals are co-integrated, that is, whether there is long-run relationship between the dependent and independent variables in the model. Therefore, by employing Johansen Co-integration test we make use of the trace statistics and Max-Eigen respectively by comparing their values with the critical values at 5% level. If the values of at least one of the Trace Statistics/MAX-Eigen are greater than the critical value, then we conclude that there is a long-run equilibrium relationship otherwise the regression is not co-integrated.

TABLE 3 : Analyses of the Test for Co-integration.

Trace Statistics /Eigenvalue	5% Critical Value	Hypothesized no of CE(s)
50.60366	47.85613	None*
23.40764	29.79707	At most 1
5.563231	15.49471	At most 2
0.228563	3.841466	At most 3

Source: Researcher's Computation

From the above table, we can conclude that there is a long-run equilibrium relationship between the dependent and the independent variables from the model since the trace statistics indicates one co-integrating equation at 5 percent level of significance.

Table 4: Regression Result

Dependent Variable: POV_t

Method: Least Squares

Date: 02/6/13 Time: 17:29

Sample (adjusted): 1981 2008

Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	56.52888	4.592766	12.308243	0.0071
$UNEMP_t$	0.532933	0.232502	2.292165	0.0081
$LITR_t$	-0.102250	0.023947	-4.269849	0.0039
$GDPGR_t$	0.216677	0.070698	3.064825	0.0075
ECM(-1)	-0.716673	0.139446	-5.139430	0.0000

R-squared	0.7181290	Mean dependent var	49.9000
Adjusted R-squared	0.6691079	S.D. dependent var	11.6395
S.E. of regression	6.6954285	Akaike info criterion	6.80115
Sum squared resid	1031.0615	Schwarz criterion	7.03905
Log likelihood	-90.21623	F-statistic	14.64940
Durbin-Watson stat	1.7795869	Prob(F-statistic)	0.000026

Source: Researcher's Computation

4.1.3 *The Statistical Significance of the Parameter Estimate*

The statistical significance of the parameter estimate can be verified by standard error test; the adjusted R -squared, t-statistics, the F-statistic and the Durbin-Watson statistics.

- For the model, when compared half of each coefficient with its standard error, it was found that the standard errors of all the variables are less than half of the values of the coefficients of the variables. Thus all the variables passed the standard error test. The decision rule is that the variables are statistically significant.
- The value of the adjusted R-squared for the model is high, pegged at 66 percent. It implies that: economic growth rate; unemployment rate and literacy rate explained about 66 percent systematic variations in output growth over the observed years in the Nigerian economy while the remaining 34 percent variation is explained by other determining variables outside the model.
- The t-statistics is used to test for the statistical significance of the parameter estimate. But very often such formal testing can be shortcut by adopting the "2-t" rule of significance. The rule state that if the number of degrees of freedom is 20 and more and if the level of significance, is set at 0.05, then the null hypothesis $\beta_2 = 0$ can be rejected if the t value exceeds 2 in absolute value, implying that the parameter estimate is statistical significant. Of course, one can always refer to the t table to obtain the precise level of significance, and should always do so when the df are fewer than 20. In our regression results the degree of freedom is higher than 20 and the estimated values of t exceed 2 in absolute value for all the variables. Thus, the variables are adjudged to be statistically significant.
- The F-statistics is used to test for stability in the regression parameter estimate when sample size increases, as well as the overall significance of the estimated regression model. Thus, we compare the calculated F* with the critical value at 5% level (0.05) at K-1, i.e. (29-1 = 28 and N-K=29-8=21 degree of freedom for the model. Where; k = the number of parameter estimated, and N= the number of the observed years. If F*> Fo.05, we reject the null hypothesis and accept the alternative hypothesis and vice versa. From the statistic table, Fo. 05 at (21, 28) degree of freedom is 2.03 while estimated F* is 14.64646. Obviously F*> F0.05 that is (14.64646> 2.03). This implies that the parameter estimate is statistically significant and stable.
- The value of Durbin Watson is 1.8 for the model. This falls within the determinate region and implies that there is a negative first order serial autocorrelation among the explanatory variables in the model.

In summary, since all the econometric test applied in this study show a long run statistically significant relationship between the dependent and independent variables from the model, thus, we accept the alternative hypothesis which states that: economic growth rate has significant implications on level of poverty in Nigerian.

4.1.4 *The Theoretical Significance of the Parameter Estimate*

For the theoretical significance of the overall estimates, we evaluated the signs and the sizes of the coefficients of the variables.

- According to the results, unemployment has correct sign (i.e. positive) and it is statistically significant. This is in agreement to our a priori expectations. It implies that when unemployment increases the level of poverty increases too in Nigeria.
- Similarly literacy rate is correct signed (i.e negative) and it is statistically significant. It implies that increase in literacy rate trickles down poverty in Nigeria. This result is expected.
- Most important for the objective of this study is the relationship between the economic growth rate and the level of poverty. The result reveals a significant and positive relationship between the economic growth rate and the level of poverty. This implies that economic growth rate does not reduce poverty in Nigeria. The recent growth of Nigerian economy does not trickle down poverty during the years under review. This result is similar to the findings of Aigbokan (2000). Aigbokan (2000) found a significant and positive relationship between growth and poverty meaning that the impressive growth of the economy in 1986 to 1992 could not yield an improvement in poverty. His findings suggests that the so-called "trickle down" phenomenon, underlying the view that growth improves poverty and inequality, is not supported by Nigeria's data.

5 SUMMARY, CONCLUSION AND RECOMMENDATIONS.

- This study used Nigeria database for the period 1980 to 2008 and to examine the impact of economic growth on the level of poverty. At the preliminary level, the study examined the stationarity and co-integration of the variables used for the empirical investigation. The study reveals that the variables have no unit root problem that is, they were stationary and co-integrated. The regression results reveal statistical and theoretical significance of the variables under investigation using standard error and t-statistic tests. The study found that, all the variables were statistically significant. The F-statistics was high enough to validate the overall significance of the model. The statistical significance of the estimate was strengthened by the lower value of the akaike and Schwarz. The regression result reveals a significant and positive

relationship between the economic growth rate and the level of poverty. This implies that economic growth rate does not reduce poverty in Nigeria. The recent growth of Nigerian economy does not trickle down poverty during the years under review.

- Based on the findings, it was established and can be concluded that economic growth rate does not reduce poverty in Nigeria. In other words, the impressive growth of the economy in recent times could not yield an improvement in poverty. The so-called "trickle down" phenomenon, underlying the view that growth improves poverty is not supported by Nigeria's data.
- The findings and the conclusion of the study suggested the need for the policy makers to ensure equitable distribution of the national income which emanate from the oil sector in particular. These resources should be allocated to building infrastructure which is capable of reducing absolute poverty. In the light of this suggestion, the policy makers should evaluate the pattern of public expenditure and ensure that they properly harnessed to favour the poor. With the widely acknowledged relationship between literacy rate and poverty, this study suggests that there is need to strive to achieve a higher literacy rate in Nigeria.

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