

# The Relationship Between Poverty And Growth In Nigeria

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## Abstract

This study focused on the relationship between poverty and growth in Nigeria. The research method adopted was a multiple linear regression model. The ordinary least square (OLS) technique and e-views software were used for the data analysis. The dependent variable used for the purpose of the research was the gross domestic product. While the independent variables were population growth rate, exchange rate, unemployment rate, investment and inflation rate. Data were collected from the Central bank Statistical Bulletin, National Bureau of Statistics and the World development indicators, covering the years 1981-2013. The result obtained shows that economic growth in the short run has a positive relationship with poverty, but in the long they have a negative relationship. Furthermore, the study showed that there is a significant relationship between economic growth and poverty, but there is no causation. It was recommended that government projects should focus on human capital development as they empower a greater fraction of the populace to contribute meaningfully to the economy. Finally inequality in income distribution should be checked as it is driving force to poverty.

## Introduction

After the re-basement of Nigeria's gross domestic product in the 2020, Nigeria's gross domestic product (GDP) was estimated to be N80,000 trillion, this is in contrast to the prior estimate of N42.4 million. Interestingly, this rebasing of the gross domestic product has put Nigeria as the leading economy in Africa and the 26<sup>th</sup> largest economy in the world. Using the gross domestic product as a yardstick for measuring growth, it can be said that the economy overtime has experienced growth.

Although there is an increasing growth in the country, there co-exists a high rate of poverty. According to the national bureau of statistics (2020) "60.9% of Nigerians living in absolute poverty rose from the 54.7%. in 2004" currently according to the afore-mentioned authority, the poverty

level rose from 60.9% in 2010 to 67% in 2020. This tantamount to 112.519 million Nigerians living below an average income of 2.00 per day.

This singular revelation is a pointer to the fact that as the years go by, the poverty level increases, i.e as the economy experiences growth, the poverty level increases too.

A close look at what can be a patchy data suggest that growth, poverty and inequality are linked... Most of the evidence confirms that poverty reduction depends on the pattern and pace of economic growth". Deducing from the above postulation, it can be said that poverty is a function of growth and income distribution. This simply is because, in the incidence of growth and income distribution. This simply is because, in the incidence of growth, it is normal to expect or assume a rise in the general per capita income, but if alongside this growth exists an inequality in income distribution, the full expectations of the growth outcome may not be realized, as the dividend of the growth will accrue mostly to the privileged minority. A clear example of this can be seen in the Nigerian economy. According to the reports of the Nigerian Bureau of Statistics (2020) which said that 67.9% of Nigerians are poor, it can then be said that only 32.1% of Nigerians can be classified as not-being poor, and based on this we say that there is a situation of inequality in income distribution in Nigeria.

Using unemployment as an indicator or as a proxy for poverty. Specifically for every percentage point of growth in real GDP above the trend sustained for a year, the unemployment rate declines by one-half percentage point.

Generally, poverty is thought to restrict the level of technological advancement in an economy, it is also thought to hinder or limit the level of skill acquisition, as a result an economy experiencing high levels of poverty cannot be said to be operating optimally. Since with the current poverty level in Nigeria, the economy is still growing reasonably well, then it is necessary to find out the actual effect poverty has on growth, i.e it is necessary to ascertain the actual impact of poverty on growth and the relationship between poverty and growth.

### **Research questions**

The following question were formulated by the researcher to aid the research work.

1. What is the relationship between poverty and growth?
2. Is there any causality between poverty and growth?

### **Research Hypothesis**

**H<sub>0</sub>:** There is no significant relationship between poverty and growth

**H<sub>1</sub>:** There is a significant relationship between poverty and growth

**H<sub>0</sub>:** There is no causality between poverty and growth

**Hi:** There is causality between poverty and growth

Fundamentally, "... poverty is the inability of getting choices and opportunities, a violation of human dignities" (United Nation, 2011). This means lack of basic capacity to participate effectively in society. It means not having a school or clinic to go to, not having the land on which to grow one's food, or a job to earn one's living, not having access to credit. Poverty means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living in marginal or fragile environments without access to clean water or sanitation.

Adam Smith (1776) referred to poverty as "... not only the commodities which are indispensably necessary for the support of life, but what even the custom of the country renders indecent for credible people, even of the lowest order to be without". This simply means that poverty includes not just the lack of basic necessities of life, but also the standards of living the society demands. i.e poverty is not just measured by lack of personal needs but also lack of social necessities.

1. Absolute poverty
2. Relative poverty

### **1. Absolute poverty**

Extreme or absolute poverty according to the World bank (2005) widely refers to earning below the international poverty line of a \$1.25 per day". By this definition it simply means that even if an individual lacks some of the basic necessities of life, but he earns or spends above the international poverty line, then such an individual is not regarded to be absolutely poor. The World Bank's definition is trying to measure poverty based on individual income. But going back to the general or the afore-given postulations and definitions of poverty by various authors and writers. It could be seen that they all posited that poverty is not easily measured by a singular factor, but it embraces a wide range of factors other than individual's income. For the purpose of this review, definition of absolute poverty by the World Bank would be referred to as income based definition of extreme poverty.

### **Relative poverty**

Relative poverty refers to a situation where a person or household whose provision with goods is lower than that of other persons or households. Relative poverty is different from absolute poverty in the sense that absolute poverty refers to lack of basic social demands, while relative poverty refers to insufficient supply of these social demands i.e having the basic social facilities below the standard of living. Thus relative poverty per se does not mean that the person cannot lead a life that is worthy of human dignity.

Generally, after exploring the various ideas and contributions on the concept of poverty, it can be said that although there are various measures of poverty. Poverty really remains a relative concept

and also its measurement remains relative and since this is the case, a meticulous approach should be deployed in the understanding and measurement of poverty to avoid ambiguity.

### **The concept of growth**

The whole idea of growth according to basic macro economic theory is an increase in the market value of the goods and service produced by an economy overtime. It may also be defined as an increase in the capacity of an economy to produce goods and services compared from one period of time to another.

### **Growth and inequality**

Inequality is a practical fact of life, evident in every economy round the globe. But overtime inequality has been noted as one of the major factors limiting growth. Really it is mostly argued that the potential effect of economic growth on poverty rates is offset either entirely or in part by an increase in income inequality.

### **Growth and inequality relationship**

The nature of relationship existing between growth and inequality is one that raises a lot of concern as may are of the opinion that there are or there seem to be a negative relationship, while some of the opinion that the relationship is positive (thought very few). To further understand this, an empirical review is quite needed.

### **The growth and poverty relationship**

There are some evidences that economic growth has reduced poverty in developing countries; but exactly how much poverty is reduced by growth? Squire (1993) regressed the rate of poverty reduction in a country against its rate of economic growth. His results show that a one percentage point increase in the growth rate reduced the poverty headcount (\$ 1 per person per day) by 0.24 percentage points. A similar econometric study was done by Bruno, Ravallion and Squire (1998). For 20 developing countries over the period 1984 to 1993; these three authors regressed the rate of change in the proportion of the population living on less than \$ 1 per person per day against the rate of growth (changes in survey mean income) and obtained a statistically significant regression coefficient of -2.12, this means that a 10 percentage points increase in growth (as measured by survey mean income) can be expected to produce a 2.12 percent decrease in the proportion of people living in poverty (\$ 1 per person per day).

Economic growth can be expected to reduce poverty more if income distribution occurs, than if it does not. This expectation is confirmed by the previously cited study of Bruno, Ravallion and Squire (1998). For the same 20 developing countries, these authors regressed the rate of change in inequality (as measured by the Gini coefficient). They obtained statistically significant coefficient of -2.28 for the growth variable and 3.86 for the inequality variable. In other words, even small

changes in the overall distribution of income can lead to sizeable changes on the incidence of poverty.

Basically looking at the postulations of Squire (1993) and Squire et al (1998), it is seen that the exact amount of poverty reduced by the growth depends at least on two factors viz: the size of economic growth rate itself and the pattern of growth, and secondly the extent of income distribution. Thus based on the studies, equality in income distribution alongside an occurrence of growth would lead to a reduction in poverty. But from a practical experience inequality is a fact of life and thus at all time income distribution can never be perfectly equal.

### **The poverty and inequality relationship**

“Coteries Paribus” there is evidence that changes in inequality can affect changes in poverty. According to Bruno et al (1998) the authors realized a positive and statistically elasticity estimate of 3.86 on the inequality variable (Gini coefficient). Leading them to conclude that “even small changes in the overall distribution of inequality can lead to sizeable changes in the incidence of poverty), however, rising income inequality could also be associated with declines in poverty rates”. Income inequality levels indeed significantly increases poverty). We find that a 1% change in income inequality will translate into 0.78% increase in poverty levels. Based on this postulation, it can be said that there is a positive relationship between inequality and poverty, thus higher inequality leads to higher poverty rate.

Focusing on poverty inequality Nexus, Ravallion and Chen (1997) used household survey for 67 developing and transitional economics over 1981-1994. The study finds that changes in inequality and polarization were uncorrelated with changes in average standards of living. Thus a positive link between the variables poverty and inequality was reported. This report is not far-fetched from that of Ram (2007). An income elasticity of poverty was used to show that highly significant roles of income and equality in poverty reduction. The study further established that the elasticity of poverty with respect to inequality is substantially larger than that of income.

From the above studies, inequality in the distribution of income is positively correlated with poverty, thus a rise in poverty means a rise in inequality and vice versa. Thus the study focuses on the impact of the interplay of poverty and inequality on growth.

### **Model specification**

For the purpose of the research, a model is developed having both the dependent and the independent variables, and the model was formulated to voer the objectives of the research work.

The dependent variable is the gross domestic product (GDP) while independent variables are population growth rate, exchange rate, unemployment, investment and inflation.

Representing the model in an econometrics form

:

$$GDP = B_0 + B_1 \text{pgr} + B_2 \text{exchr} + B_3 \text{unemp} + b_4 \text{inv} + b_5 \text{inf}$$

Where

$B_0$  = Constant

$B_1$  to  $B_5$  = Coefficients

$U$  = Error/stochastic term

### **Gross domestic product**

This is the monetary value of goods and services produced within a geographical boundary or a country in a given period, usually one year. The gross domestic product constitutes a measure of the growth in an economy as it measures the market value of goods and service produced in a country over a period of time. N.B the GDP tends to fall during the period of depression but increases during the period of boom or increased output.

### **Exchange rate**

This simply refers to the ratio of exchange of one domestic currency to another foreign currency. For example the ratio of exchanging naira to dollar is simply referred to as exchanging rate. Exchange rate is a major influencing factor in an economy as it determines factors like imports, foreign investment, etc and these factors largely affect the country's economy.

### **Unemployment**

In a plain language, unemployment is said to exist when people are without work and are actively seeking for work. Unemployment is a situation where those who are within the working age and are willing to work at the current wage rate have no work.

### **Investment**

Investment is best explained as capital expenditure made with the hope of income generation. It is also defined as money committed or property acquired for future income. Thus on an aggregate, it is the entire capital expenditure made in an economic within a period of time.

### **Inflation**

The idea of inflation presupposes a sustained increase in the general price level of goods and services in an economy over a period of time. Inflation could be creeping or even galloping.

N.B. inflation reduces the purchasing power of the currency.

### **A prior expectation**

- i. population growth rate is expected to be negative with the gross domestic product.
- ii. Exchange rate is expected to have a positive relationship with the gross domestic product.
- iii. Unemployment is expected to have a negative relationship with gross domestic product.
- iv. Investment is expected to have a positive relationship with gross domestic product.
- v. Inflation is expected to have a negative relationship with gross domestic product.

### **3.5 Diagnostic test of the model**

The following diagnostic tests were carried out:

#### **3.5.1 Goodness of fit**

The coefficient of multiple determination ( $R^2$ ) explains the proportion of variation in the dependent variables explained by the independent variables and therefore provides an overall measure of the extent to which the variation in the independent variable explains the variation in the dependent variable.

#### **Decision rule**

The higher the  $R^2$ , the higher the variation of the dependent variable. If the  $R^2$  is low, the lower the variation of the dependent variables.

#### **Overall significance of the model**

The probability of the statistics was used to test the overall significance of the regression.

#### **Decision rule**

Reject the null hypothesis when the probability is less than 0.05, otherwise do not reject. Therefore when the probability is greater than 0.05, then it is significant.

#### **Auto correlation**

Durbin Watson statistics was used to test whether there is correlation between the members of series of observation ordered in time.

#### **Decision rule**

The value is less than lower limit ( $dl$ ), there is evidence of positive first serial correlation but if it is greater the upper limit ( $du$ ) there is no evidence of positive first order serial correlation but if the lies between the lower and upper limit, there is an inconclusive evidence regarding the presence or absence of positive first order serial correlation.

### **Normality**

This test was carried out to check if the error term follows the normal distribution by using the Jarque-bera test for normality.

### **Decision rule**

Reject the null hypothesis if the probability of the Jarque-bera is less than 0.05 level of significance, but do not reject if it is greater than 0.05 level of significance.

### **Heteroskedasticity**

The white heteroskedasticity was carried out to ascertain whether the error term ( $u$ ) in the regression model has common or constant variance overtime.

If the probability of the statistics heteroskedasticity is greater than 0.05, error term is constant and so there is hereroskedasticity if It less than 0.05 error variance is not constant and thus there is homeoskedasticity.

Stationarity test:

Augmented Dickey-filler unit root test (ADF) was conducted to ascertain whertehr variables in the model are stationary.

### **Decision rule**

Reject the null hypothesis if the ADF statistics is greater than the critical value (in absolute terms) but do not reject null hypothesis if the ADF test statistics is less than critical value (in absolute terms).

### **Multicollinearity**

Multicollinearity is a situation in which tow or more explanatory variables in a multiple regression model are highly linearly related. The correlation matrix which is a matrix that gives the correlation between pairs of data sets was used in testing for the presence of multicollinerity.

### **Decision rule**

From the rule of the thumb, multicollineraity is a problem when the relationship between a explanatory variable and another is in excess of 0.8, otherwise multicollinearity is not a problem

### **Long run relationship**

Theoretically, it is expected that a regression involving non-stationary time series may produce serious results. Co-integration test reveals whether the combination do have a long term stable relationship. The Engle and Granger co-integration test was used.



### **Decision rule**

If the ADF test statistics is greater than the critical value at 0.05 level of significance, we reject the null hypothesis otherwise we do not reject.

### **Causality**

This test was carried out to identify the relationship between event (the cause) and a second event (the effect) it establishes whether the event / variable are responsible for the other variable.

### **Short term relationship**

This test was used to estimate the speed at which the dependent variable returns to equilibrium after a change in an independent variable.

If the error correction mechanism is negative, there is convergence i.e there is equilibrium.

### **Answering the research question**

The research question was answered using the coefficient of the independent variables and the causality test result.

### **Test of hypothesis**

The hypothesis was tested at 5% level of significance using the coefficient of the independent variable.

### **Decision rule**

Reject the null hypothesis if the probability is less than 5%

### **3.8 Method of estimation**

For the purpose of the research work, the ordinary least square method (OLS) will be used. It is chosen because it is the best linear unbiased estimate (BLUE) and even reviews statistical package was used for this purpose.

### **Analysis data**

Data for the years 1981 to 2020 which was analyzed with the use of ordinary least square and E-view computer software was used for this purpose.

The computer output is at the appendix.

### **Diagnostic test**

The table below presents the result of the diagnostic test. The relevant results are stated in the table below.

**Table .1 Diagnostic test result**

Variable	Value
R <sup>2</sup>	0.984147
Adjusted R <sup>2</sup>	0.981211
Prob (f-stat)	0.000000
Durbin Watson	1.561302
F-statistics	325.2256

Source: Authors computation 2020

### **Explanation powers of the model/goodness of fit**

The coefficient of multiple determinations R<sup>2</sup> was used to establish the goodness of fit of the regression line. Here the coefficient of multiple determination (R<sup>2</sup>) with a value of 0.984147 from table .1 implies that 98% of total variations to GDP (the dependent variable) are explained by changes in the independent variables. This level of explanatory power was considered satisfactory for the study.

### **Overall significance of the regression**

To determine if all the explanatory variables have significant effect on the dependent variable the F-test was used followed the decision rule which is: reject the null hypothesis when f-probability is less than 0.05 level of significance otherwise do not reject.

Therefore we reject the null hypothesis since the probability (f-statistics) in table .1 which is 0.000000 is less than 0.05 in the modes. We therefore conclude that the independent variable have significant impact on the dependent variable in the model.

### **Heteroskedasticity**

**Table .2 White heteroskedasticity test result**

f-statistics 0.828336 probability 0.606875
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Source: Author's computation 2020.

The white heteroskedasticity test was carried out to ascertain whether the error term (ut) in the regression model has a constant variance.

The decision rule states that if the probability of F-statistics is less than 0.05, error term is said not to be constant thus there is heteroskedasticity.

From table .2 the probability of the F-stat is 0.606875 thus it is greater than 0.05, so it can be said that the error term is constant, i.e homoskedasticity.

### Stationarity

To avoid the generation of spurious results we tested for stationarity using via augmented Dickey-filler unity root test.

### Decision rule

If the absolute arguments dickey-filled is greater than the Mackimon critical value then the variable is stationary.

**Table .3 Stationarity test result**

Variables	Level	1 <sup>st</sup> difference	2 <sup>nd</sup> difference	Order of integration
GDP	3.429153	-1.176250	-5.990050	1 (0)
PGR	-0.598929	-5.4382882	-6.596173	1 (1)
EXCHR	-1.694859	-2.919649**	-6.5025666	1 (2)
UNEMP	-1.793161	-5.669489*	-10.81650	1 (1)
INV	-1.216083	-3.475007**	-5.733064	1(1)
INF	1.577988	-3.25528**	-5.5.819473*	1 (1)
1%	-3.6576	-1.6661	-3.6752	
5%	-2.9591	-2.9627	-2.9665	
10%	-2.6181	-2.6200	-2.6220	

(\*) (\*\*) (\*\*\*) indicates significance at 1%, 5%, 10% level respectively

Source: Author's computation 2020

The critical value is calculated at 5% level of significance.

From the unit root test result in table .3, GDP is integrated at level, while PGT, UNEMP, INV and INF are stationary at 1<sup>st</sup> difference and EXCHR at 2<sup>nd</sup> difference.

### Long term relationship test

Johansen cointegration test was used to examine the long run relationship among the variable.

### Decision rule

If any of the likelihood ratios is greater than the critical value, then the long term relationship of the variables can be estimated

**Table .4 Johansen cointegration test result**

Eigenvalue	Likelihood ratio	5% critical value	1% critical value	Hypothesized no of CES
0.820931	122.8811	94.15	103.18	None **
0.589877	69.56167	68.52	76.07	At most 1
0.525770	41.93141	47.21	54.46	At most 2
0.326492	18.80344	29.68	35.65	At most 3
0.1326492	0.550547	15.41	20.94	At most 4
0.000717	0.22247	3.76	6.65	At most 5

Source: Author's computation 2020

From table .4, two of the likelihood ratios are greater than the critical value, thus it is said that the long run relationship of the variables can be estimated.

### Multi-collinearity

the test for multi collinearly was conducted to ascertain the degree of relationship that exists between the variables PGR,EXCHR, UNEMP, INV and INF. The correlation matrix was used to test for multi-collinearity.

### Decision rule

Multi-collenearity is sad to be a problem when the value of a variable is greater than or equals to 0.8

**Table .5 Correlation Matrix**

	<b>Pgr</b>	<b>Exrch</b>	<b>Unemp</b>	<b>Inv</b>	<b>Inf</b>
Pgr	1.000000	0.311399	0.135775	0.355449	0.689943
Exrch	0.311399	1.000000	0.363163	0.502752	0.399685
Unemp	0.135775	0.363163	1.000000	0.80676	0.661600
Inv	0.355449	0.502752	0.806796	1.000000	0.786671
Inf	0.689943	0.399685	0.661600	0.786671	1.000000

Source: Authors computation 2020.

From table .5, it is seen that there exist a multicollinearity problem between unemployment and investment (0.806796), but for purpose of this study, this multicollinearity is not considered a severe problem for the model.

### Normality test

The normality test was conducted to ascertain the normal distribution of the error term.

### Decision rule

If the probability of Jarque bera is less than 0.05, the error term is said not to be normally distributed.

The histogram normality test result (in the appendix) shows that the Jarque bera probability which is 0.2312499 is greater than the 5% level of significance. Thus the error is said to be normally distributed.

### **Auto correlation**

The Durbin Watson test was used to test for auto correlation. The test was conducted to ascertain if the error term is correlated. Here, we deal with the simple case of linear relationship between the successive values of terror term. This known as a first order autoregressive relationship and the decision rule is as follows:

If the computed Durbin Watson (d) value is less than the lower limit, there is evidence of positive first order-serial correlation, if it is greater than the upper limit, there is no evidence of positive first order serial correlation; but if Durbin Watson (d) values lies between the lower and the upper limited, there is inconclusive evidence regarding the presence or absence of positive first order serial correlation. From Table .1, the d value was shown to be 1.561302 and (N=33) (K=6) the lower limit value is 1.061 and the upper limit is 1.900.

The value which is 1.561302 is neither lower than the lower limit nor greater than the upper limit, thus it can be said to be in between, thus it is concluded that there is an inconclusive evidence of positive of positive first order serial correlation.

### **Short term relationship**

The test was used to obtain the short term estimate of the variable. The error correction mechanism was sued to adopt the parameters in the model and to check if they meet the apriori signs. The error correction mechanism is preferred due to its ability to overcome the problem of spurious regression.

**Table .6 The short run relationship test result**

<b>Variable</b>	<b>Co-efficeint</b>	<b>Std error</b>	<b>T-stat</b>	<b>Probability</b>
ECMC-1	-0.617926	0.112269	-5.503979	0.0001

**SOURCE: Authors computation 2020.**

### **Presentation of results**

The results of the various tests carried out in this research are presented below:

- (i) **The basic regression result**

**Table .9 The Basic regression result**

Variable	Co-efficient	Std error	T.stat
C	1275.258	749.5321	1.701405
Pgr	173.6345	87.71189	1.979601
Exchr	-0.657213	0.141853	-4.633046
Unemp	-192.8698	83.8853	-2.299120
Inv	6.53E-05	2.64E-05	2.476043
Inf	0.122885	0.00813	15.33563

Source: Authors computation 2020.

This result was not used due to the high possibility of generating a spurious result.

### The long run estimate result

The co-integration result is presented below after multiplying by -1

**Table .9 The cointegration result**

Variable	Co-efficient	Std error	T.stat
C	10566.42		
Pgr	-1008.066	268.787	3.75043
Exchr	0.095698	0.20142	-0.47512
Unemp	-1034.975	2.7.194	4.995198
Inv	2.41E-05	2.8E-05	-0.86E-05
Inf	0.150514	0.00992	-15.172782

Source: Authors computation 2020.

This result can be summarized in an equation form

$$GDP = -10566.42 + 1008.066pgr - 0.095698Exchr + 1034Unemp - 2.41E-05inv - 0.150514mf$$

$$S.E \quad (268.787) \quad (0.20142) \quad (207.142) \quad (2.8E-05) \quad (0.00992)$$

$$T-stat \quad 3.75043 \quad - \quad 0.47512 \quad 4.993198 \quad -0.86E-05 \quad -15.172782$$

### (ii) ECM Parsimonious result

This shows the ECM after its result is adjusted.

**Table .10 ECM Parsimonious result**

Variable	Co-efficient	Std error	T-stat	Probability
Dgdp (-2)	0.542114	0.090811	5.969697	0.0000
Dgdp (-3)	1.032840	0.138626	7.450536	0.0000
Dpgr	107.7594	34.63530	3.11261	0.0083

Dpgr (-3)	-152.0669	46.02711	<u>-3.303849</u>	0.0057
D Exchr (-1)	0.129471	0.83555	2.267616	0.0410
D Exxhr (-3)	-0.320203	0.077827	-4114308	0.0012
Duemp (-1)	185.6755	30.10546	6.167504	0.0000
Duemp (-2)	209.3093	36.14005	5.791616	0.0001
Duemp (-3)	61.06087	22.96424	2.658954	0.0197
Dinv (-2)	-4.075-05	1.37E-05	-2.975512	0.0107
Dinv (-3)	2.12E-05	1.00E-05	2.116612	0.0542
Dinf	-0.044108	0.008674	-5.085069	0.0005
Dinf (-1)	-0.044108	0.008674	-5.085069	0.0002
Dinf (-2)	-0.016862	0.008512	-1.980839	0.0692
C	-6.737783	2.478742	-2.718226	0.0176
Ecm (-1)	-0.617926	0.112269	-5.503979	0.0001

R – Squared 0.965789                      mean dependent var 24.92414

Adjusted R-squared 0.926315              S.D dependent var 18.96310

S.E of regression 5147531                Akake into criterion 6.416014 sum of

Squared resid 344.4619                      schwarz criterion 7.170383

Likelihood log -77.03219                      F-statistic 24.46638

Durbin Watson 1.767698                      pro (t-stat) 0.000000

Source: Authors computation 2020

### (iii) **Pair wise granger causality result**

This result shows the causation between the variable

**Table .11 Pair wise granger causality result**

Null Hypothesis	Obs	F-statistic	Probability
PGR does not Granger cause GDP	31	0.11976	0.88762
GDP does not Granger cause PGR		3.01039	0.06669
EXCHR does not Granger cause GDP	31	0.21903	0.80472
GDP does not Granger cause EXCHR		1.99207	0.15670
UNEMP does not Granger cause GDP	31	1.69810	0.20271
GDP does not Granger cause UNEMP		1.94654	0.16302
INV does not Granger cause GDP	31	1.14268	0.33447
GDP does not Granger cause INV		0.56281	0.57639
INF does not Granger cause GDP	31	0.87927	0.42707

GDP does not Granger cause INF		0.12054	0.88694
EXCHR does not Granger cause PGR	31	1.57851	0.22542
PGR does not Granger cause EXCHR		1.38269	0.26875
UNEMP does not Granger cause PGR	31	2.60637	0.09297
PGR does not Granger cause UNEMP		3.50656	0.04485
INV does not Granger cause PGR	31	1.97445	0.05911
PGR does not Granger cause INV		0.03326	0.96733
INF does not Granger cause PGR	31	6.18355	0.00636
PGR does not Granger cause INF		1.47348	0.24764
UNEMP does not Granger cause EXCHR	31	0.73928	0.48723
EXCHR does not Granger cause UNEMP		3.24312	0.05628
INV does not Granger cause EXCHR	31	1.89740	0.17015
EXCHR does not Granger cause INV		1.11554	0.34292
INF does not Granger cause EXCHR	31	0.97765	0.38960
EXCHR does not Granger cause INF		3.07407	0.06333
INV does not Granger cause UNEMP	31	1.21846	0.31202
UNEMP does not Granger cause INV		2.24357	0.12622
INF does not Granger cause UNEMP	31	0.57003	0.57242
UNEMP does not Granger cause INF		1.75920	0.19206
INF does not Granger cause INV	31	2.24360	0.12622
INV does not Granger cause INF		3.48552	0.04560

SOURCE: Authors computation 2020.

### Answering of research questions

The research questions were answered using the coefficient of the long term relationship for the first research question; and the causality test for the second research question.

#### Research question 1

What is the relationship between poverty and growth?

From the table .9, poverty (proxied by unemployment) is said to have a negative relationship with growth, i.e. unemployment from the table is -1034.975 thus the negative coefficient indicates a negative relationship.

#### Research question 2

Is there any causality between poverty and growth?

Table .11 shows that the probability for unemployment (poverty) does not granger cause gdp (growth) is 0.20271 and the probability for “gdp” (growth) does not granger cause unemployment (poverty) is 0.16302, the two probabilities are greater than 0.05, thus both are not significant, thus



it can therefore be said that there is an independent causation between growth and poverty, i.e poverty exist in independence of growth and vice versa.

### **Test of hypothesis**

The t-test of the long run estimate was used in testing the hypothesis. The hypothesis was tested at 5% level of significance.

### **Decision rule**

Reject the null hypothesis if the t-calculated is greater than the t-tabulated; otherwise do not reject the null hypothesis.

The t-tabulated is derived from the distribution table using (n-k).

Where

N = number of observation

K = number of variables

### **Hypothesis 1**

**Ho:** There is no significant relationship between poverty and growth

**Hi:** There is a significant relationship between poverty and growth

From the result in table 4.12, poverty is seen to have a significant relationship with growth.

This is shown with the t-calculated 4.995198 which is greater than the tabulated 2.052

Thus following the decision rule we reject the null hypothesis and conclude that there is a significant relationship between poverty and growth.

### **Hypothesis 2**

**Ho:** There is no causality between poverty and growth

**Hi:** There is causality between poverty and growth

From the result in table 4.11, it is shown that there is an independent causation between poverty and growth i.e “gdp does not granger cause unemp” and “unemp does not granger cause gdp”.

The probability of growth on unemployment and vice versa is greater than 0.05, thus they are not significant.

Therefore since poverty exists independent of growth and vice versa, we accept the null hypothesis i.e there is no causation between poverty and growth.

(iv) **Summary of t-test statistics**

**Table .12 T-test result**

Variable	T-calculated	T-tabulated	Conclusion
Pgr	3.75043	2.052	significant
Exchr	-0.47512	2.052	significant
Unemp	4.995198	2.052	significant
Inv	-0.86E-05	2.052	significant
Inf	-15.172782	2.052	significant
n-k	33-6=27 testing	0.05 level of significance	

**Discussion of findings**

**Finding one**

There is a significant relationship between poverty and growth

The mere existence of significant relationship between growth and poverty relays the existence of some level of inter dependency. This idea also is supported by the result of the short term estimate in table 4.10 61.06087, which shows a positive relationship between poverty (proxied by unemployment) and growth thus it can be said that in the short run poverty have a positive relationship.

On the other angle, going by the co-efficient of the long term estimate, as shown in table 4.9, there is a negative relationship between unemployment and growth. This means that for a unit change in poverty by -1034.975 unit, that is to say that for a unit change in growth in the long run, unemployment depreciates by -1034.975; and thus is in line with the Okun’s law which posits that “... for every 1% increase in the unemployment rate, a country’s gdp will be roughly an additional 2% lower than its potential gdp..”and vice versa. Thus this explain why Dollar and Kraay, (2001) said economic growth may reduce poverty by raising the incomes of everyone in the society, including the poor”.

Thus this finding shows in the short term the relationship between poverty and growth is positive and this can be largely attributed to income inequality as Quah (2000) said “..... Only under conceivably high increase in inequality would economic growth not benefit the poor”. This means that it is only inequality in income distribution that can make poverty rise with growth. But in the long run, the findings show that poverty and growth is negatively related.

**Finding two**

There is no causality between unemployment and Gdp.

The findings as seen in table .11 shows that for “unemployment does not granger cause gdp” the probability which is 0.20271 is greater than 0.05 and thus is said not to be significant. For “gdp does not granger cause unemp” the probability is 0.1637 and is also greater than 0.05 which implies that it is also said not to be significant.

Since the two probabilities are not significant, it then means that there is an independent relationship. By an independent relationship we mean that gdp does not depend on unemployment and vice versa. Hence we say that there is no causation.

### **Finding three**

There is a positive relationship between exchange rate and economic growth

Table .9 shows that the long run relationship coefficient of exchange rate is 0.095698. this means that a unit increase in growth would increase exchange rate by 0.095698

The positive relationship between exchange rate and growth entails that the activities of the rate of exchange has an impact on growth. This is contrary to the apriori expectation. The apriori is a negative relationship between economic growth and exchange rate. The negative relationship was because an increase in exchange rates discourage industrial investments. Nigeria is a labour abundant country and thus industrial investments would require importation of machines, but if the exchange rate is high for example, the cost of importing the machines would be igh and the profit margin low, thus potential investors will tend to shy away. But on the other hand, the positive relationship between growth and exchange rate as found by the study means as a unidirectional movement between economic growth and poverty. Thus if the exchange rate is high for example, importation becomes expensive and thus is discouraged while exports becomes cheaper. Also domestic production increases and also does employment; output increases as a result of the increased domestic production and increased employment (workforce). This leads to an increase in gdp.

### **Finding four**

There is a negative relationship between population growth rate and economic growth. The relationship between population growth rate and growth as found by this study is shown to be negative. The long run relationship coefficient of population growth rate as shown by table 4.9 is -1008.066. This can be said to mean that a unit change in growth would lead to a change in population growth rate by exactly -1008.066

This finding is supported by the population theory of Malthus that posited that “the power of population is indefinitely greater than the power in the earth to produce subsistence for man”. To further confirm the negative relationship between population and growth Malthus posited that “the increase of population is necessarily limited by the means of subsistence”. Recall that when

population increases (following the iron law of wages) wages fall and unemployment rises and also hunger and starvation ensues.

Thus deducing from the above postulations, it can therefore be said that population is really checked or limited by growth (via increased employment). Malthus gave reasons for this as he mentioned poverty as the major contributor to child bearing.

## **Conclusion**

The study concentrated on the relationship between poverty and growth in Nigeria. The research method used for analysis is the multiple linear regressions, which featured the ordinary least square techniques (ols) and e-view version 3.1 was used for the data analysis. The dependent variable used for the purpose of the research was the gross domestic product while the independent variables were population growth rate, exchange rate, unemployment, investment and inflation. Data for these variables were collected from the Central Bank statistical Bulletin, National Bureau of Statistics and the World Bank data covering from the year 1981-2013. The result obtained from the research shows that in the short run there is a positive relationship between poverty and growth in Nigeria.

The short run positive relationship between growth and poverty explains why growth and poverty are simultaneously growing in Nigeria. On the other hand, the long run negative relationship between growth and poverty explains why developed economics like the USA experience constant growth with the least unemployment and poverty rate. For example American enjoys a 2.67 annual growth rate with a decreasing poverty rate of about 14.5%.

Finally this result shows that even though poverty and growth may seem to be independent, there still exist a significant relationship between them.

## **Recommendation**

As a way of curbing the impact of poverty on growth, the following recommendations are made:

1. A conscious and deliberate effort should be made by the government to ensure or rather reduce income inequality as it is a driving force to poverty in the presence of a seeming growth.
2. The projects of the government should largely dwell on human capital development, as it empowers a larger fraction of the economy (workforce) to be skilled and at the same time contribute significantly to growth.
3. As a way of encouraging growth, the government should deploy adequate expansionary fiscal policies, thus increasing investment.
4. The exchange rate should be used as a tool for controlling the economic activities of the economy as its conscious control could increase economic growth in the economy.

5. The government also should adopt policies that will cushion the negative impact of the population in Nigeria, thus instead of the population limiting the growth prospect it should rather increase the work force.

## References

- Aboyade O. (1975). Impact of household composition and anti-poverty programs on welfare in Nigeria; a comparative analysis. *Journal of economics and sustainable development* vol 5, No. 18
- Adam S. (1770) *An enquiry into the nature and cause of the wealth of nation.*
- Aigbokhan B. (1998) *Poverty, growth and inequality in Nigeria. A case study of final report presented at the AERC workshop, Nairobi Kenya*
- Asaju K, Arome S and Anya S. (2014) *The rising rate of unemployment in Nigeria and socio-economic and political implications, global business and economic research journal* 3(2): 12-32.
- Central bank of Nigeria (2013) *Annual statistical bulletin* vol. 21
- Copenhagen Declaration (1995) *World summit for social development programme of action chapter 2: Eradication of poverty. Earth negotiation bulletin* vol. 10 No. 44. International Institute for Sustainable Development.
- Deininger K and Squire L. (1996) *A new data set measuring inequality. World Bank Economic Review*, vol. 10, No. 3,563. P.591
- Dohlman E. and Mikael S. (2007) *Economic growth versus poverty reduction: A hollow debate. Oecd.org*
- Dollar D. and Kraay .A. (2001) *Poverty, growth and the World bank: A dollar a day. The World bank development research group. Paper 2587*
- Falusi, A . O (2014) *Employment generation for poverty reduction in Nigeria. Issues for consideration presented at the 21<sup>st</sup> celebration of the development policy centre in memory of Professor Aboyade O.*
- Galbraith S. (1958) *Structural dimension of poverty in India. Poverty index*, 42-49
- Homby A. S. (1998) *Poverty in Nigeria. Global majority e-journal*, vol 1, No. 1, 46-56
- Kaznet S. (1955) *Economic growth and inequality. American Economic Review* 45 (1) 1-28
- Malthus, R. (18<sup>th</sup> entury) *An essay on the principle of population. St Paul's church-yard, I. Johnson, London.*

Mthulin N., John .A. and Kjeli It (2013) Inequality, economic growth and poverty in the middle east and North Africa

National Bureau of Statistics (2013) Annual statistical bulletin

OECD (2007) Promoting pro-poor growth: Policy guidance for donors, povnet, dac, parts. Extract for publication promoting pro poor growth.

Ogwumike, F. O. (2001) An appraisal of poverty and poverty reduction strategies Nigeria CBN Economic and Financial Review vol 39, No. 4, 45-71

Okumadewa, F. U. (2001) Poverty reduction in Nigeria. A four point demand, an annual guest lecture of the house, University og Ibadan.

Quah D. (2001) Growth and inequality, issues and policy implications: simple arithmetic's on how income inequality and growth matter.

Ravallion, M. and Bidani B. (1994) How robust is poverty profile? Economic review 8 (1) January. Washington D. C. The World Bank

Rodrike D. (2000) Growth versus poverty reduction. A hollow debate in finance and development, IMF, Washington D.C

The Republicans (1964) Why we need a relative income poverty measure. US congress report of the Joint Economic Committee, Washington D.C

Wallen M. (2012) Exchange rate policy and full employment. Presented at Professor William's conference, University of Newcastle, New South Wales, Australia.

World Bank (2005) Ending extreme poverty. Global monitoring report: World Bank Group Washington D. C.

World Bank (2006) Annual review of development effectiveness; getting results, World Bank Independence Evaluation Group Report, Washington D.C

Yusuf R. and Abass I. M. (1996) The Nigeria economic growth without development. The Bann Social Science for African University of Benin City, Nigeria.