Correlates of Poverty in Nigeria: An Analysis of Macroeconomic Objectives

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Abstract

The level of poverty in developing countries appears to be increasingly high, especially in sub-Saharan African countries, of which Nigeria is one. Nigeria presents a picture of abject poverty in the midst of abundant resources. For instance, in 2014, the Human Development Index value (HDI) was 0.514, which positioned her at 152 out of 188 countries. Though this value was above the average of 0.505 for countries with low HDI, it is below the average of 0.518 for countries in sub-Saharan Africa. Also, the five major macroeconomic objectives of economies the world over as well as the main overriding objective of the sustainable development goals are aimed at alleviating poverty. The objective of this study, therefore, is to analyse the effect of the five macroeconomic objectives of achieving price stability, reducing inequality, maintaining favourable balance of payments, increasing inclusive economic growth and reducing unemployment and poverty in Nigeria, using multiple regression analysis of time series data from 1980 – 2014. The study also sought to establish the existence of a long-run relationship among the variables using the co-integration test. It further examined the type of causality existing among poverty and the parameters of the model which are inflation, balance of payments, unemployment, gross domestic product (GDP) and gross national income (GNI) per capita. The results revealed that there exists a positive effect of GDP and unemployment, while the effects

of balance of payments, inflation and GNP per capita are negative on the level of poverty. Also there is a long-run relationship among the variables. The study recommended policies that, in the long run, will promote trade, reduce unemployment, generate inclusive growth and reduce inequality. The study concluded that with macroeconomic stability, poverty will be greatly reduced.

Keywords: Poverty, Macroeconomic objectives, Regression and Nigeria

Introduction

The desire of every nation is to prosper and this is achieved when her citizens can easily access the basic necessities of life. However, poverty exists in all nations of the world, though at various levels and grades. The level of poverty in developed nations is lower when compared to developing nations and even lower when compared to African countries. For instance, according to FAO (2008), of the 800 million people living in developing countries, one sixth of them do not feed sufficiently both in terms of quality and quantity required for a healthy and productive life.

Honfoga and Boom (2003), in their study, discovered that the number of Africans who were undernourished had been on the rise and as at 2003 stood at about 200 million people. Furthermore, the number of people consuming less than the nutrition requirement of 2,100 calories per day in sub-Saharan African was estimated at 337m in 2001 which was 57 per cent of the population of the region (Rosen and Shola, 2002).

Furthermore, based on income measures, the last 20 years have seen significant reductions in the depth and severity of extreme poverty in the developing world. In absolute terms, extreme income poverty has fallen substantially, with the number of people living on less than $1.25 a day declining from 1.9 billion in 1981 to 1.4 billion in 2005. In relative terms, the proportion of people living in extreme poverty dropped from 52.0 to 25.7 per cent during this period (Chen and Ravallion, 2008). While this declining trend in poverty levels is welcome, it is also important to point out that poverty rates remain unacceptably high in sub-Saharan Africa.

The picture is even worse in Nigeria as poverty seems to be the country's greatest challenge. This may be why it has been difficult to attain the sustainable development goals (SDGs) as proposed by the United Nations. The objective of the SDGs is structured around three main themes: to end poverty, to protect the planet, and to ensure prosperity. Despite the fact that Nigeria as a UN member state committed to achieve the anti-poverty targets of the SDGs by 2015, poverty in Nigeria has been on the increase. Presently more than 70 per cent of Nigerians are poor. Unfortunately, Nigeria is a country thirsty in a land surrounded by water. She is characterized by a population of very few rich people while the majority are poor.

The major macroeconomic objectives of government are: to promote economic growth, achieve full employment, achieve a fair and equitable income, maintain price stability and have a favourable balance of payments, all of which are geared towards reducing poverty levels. However, fiscal and monetary measures embarked on by the government of Nigeria appear to be ineffective in reducing poverty, since poverty had consistently been on the increase. For instance, 6 per cent (60 million) of the one billion poor people in the world are Nigerians (Nwachukwu, 1996).

Trends in poverty

In purely economic terms, Todaro (1985) defined poverty as the percentage of people living below a specified minimum level of income. That means a person is counted as poor if his measured standard of living, estimated on income or expenditure, is below a minimum acceptable level in 'relative' (e.g. unable to buy a pre-specified consumption basket) and 'absolute'(i.e. below US$1 per day) terms.

The Nigerian experience has shown an increasingly high level of poverty. The percentage of those who were poor increased from about 27 per cent in the early 80s to 46.3 per cent in 1985, 42.8 per cent in 1992, and 67 per cent by 1996. From 1999 till date, it is about 70 per cent. According to the World Bank Report (2001) only 27.2 per cent of the Nigerian population fell above poverty line, 48.5 per cent were below the poverty line and 24.3 per cent were categorized as being in extreme poverty and it is still within that range up till now.

In 1980, 28.1 per cent of the total population were chronically poor and by 1996, the percentage had increased to 65.6 per cent. Statistics show that the total poverty head count rose from 27.2 per cent in 1980 to 65.6 per cent in 1996, an increase of 141.2 per cent. However, between 1996 and 2004, the percentage of total poor declined by 17.1 per cent to 54.4 per cent.

Over the same period, the percentage of the population in the core poor category rose from 6.2 to 29.3 per cent, an increase of 380 per cent, and further declined by 24.9 to 22.0 per cent in 2004. Using the US$1 per day definition of poverty, about 70.2 per cent of Nigerians were estimated to be poor as of 2001. By 2003, 70.8 and 92.4 per cent lived below $1 and $2 per day respectively (World Bank, 2009).

Furthermore, of an estimated population of 75m, 34.7m were poor in 1985. In 1996, of the population of 102.3m, 67.1m were poor, and by 2010, 109.03m were poor out of an estimated population of 158.01m. Presently, the estimated population of Nigeria is about 180m and about 126m are poor. This presents a pathetic picture, especially when considered against the huge amounts of money embezzled and misappropriated by the country's leaders (Egunjobi, 2014).

Again, the level of poverty increased by 20 per cent between 1990 and 1999, before recording a modest 7 per cent decrease between 1999 and 2005. This trend shows that there has been a continuous increase in poverty in Nigeria. However, as a result of increased income levels and the spread of real gains to a larger percentage of the population coupled with a better management of macroeconomic variables within the years 1985 to 1992, there was a decrease in poverty level. Despite this drop in poverty level in 1992, the proportion in poverty was about five million higher than the 1985 figure and by 2010 the population in poverty had increased sharply to 109.03m (Iyoko, 2012).

Poverty and macroeconomic variables

In economic theory, stabilization of the economy is one of the paramount goals of government and this can be achieved through macroeconomic variables, which have considerable effects on poverty indices. The government must make sound and effective fiscal policies in order to stabilize the economy, especially in periods of business cycles which are bound to surface occasionally to destabilize the economy. Business

cycles, if not properly managed, will affect the poor the more, especially in the long run, and this tends to increase the level of poverty. Two major business cycles that affect the poor majorly are inflation and recession cycles. In periods of recession, there will be reduction in production levels leading to high unemployment, loss of income and reduction in income levels. Also in periods of inflation, real income falls as a result of consistent increases in prices, which lowers the standard of living, especially among the poor, and brings untold hardship. During such periods, the onus is on the government and the central bank to make and implement stabilization policies through the use of macroeconomic variables to stabilize and redirect the economy to a desired path in the short run.

Problem statement

Governments all over the world claim to desire to achieve the major macroeconomic objectives of economic growth, equitable distribution of income, price stability, favourable balance of payments and full employment. These can be achieved by ensuring that these monetary tools are used to stabilize the economy, especially during business cycles. However, this has been very difficult to achieve in most developing countries, Nigeria inclusive. The reason for this is because these monetary tools have not been effectively used in a way that can reduce poverty. Also monetary and fiscal policies proposed by government are sometimes not implemented, are tailored to satisfy the selfish interests of those in power, or are not suitable for the Nigerian environment. Thus, the inefficiency of achieving these macroeconomic objectives translates into continuous increase in poverty.

Poverty in Nigeria, according to the World Bank, is about 70 per cent and this is reflected in high unemployment rates, double digit inflation rates, unfavourable balance of payments, reduction in national income as a result of falling oil prices, high level of inequality, and increased growth rates without development. The Nigerian economy is characterized by very few rich people and very many poor people; as a result, the majority of the citizens cannot afford three square meals, have low access to infrastructural facilities, adequate medical care, shelter and other necessities of life. This is compounded by the failure of government macroeconomic policies to reduce poverty and enhance development of the Nigerian economy.

Research objectives

The objectives of this study are to:

- analyse the impact of the major macroeconomic variables which are: unemployment, inflation, balance of payments, distribution of income and economic growth on poverty;
- investigate if a long-run relationship exists between the identified parameters and
- determine the extent of causality between poverty and the parameters of the model.

Literature Review

Theoretical and conceptual framework

Theoretical framework

a. The Power Theory of Poverty

According to this theory, poverty emanates from the structure of political power in the society. This is because power is vested in a few who possess immense political power to organize the economic situation in such a way that their personal interests are guaranteed. This condition will continue until the poor put in intense pressure to bring about a change in the distribution of political power in favour of the majority. In summary, the theory postulates that opportunities, income and wealth are determined with the aid of state power.

This is applicable in Nigeria, where the power to regulate the economy is in the hands of the few political elite who perpetuate themselves in government and make policies which favour their own interests rather than the interest of the populace. They are "commanders" rather than "public servants". This theory seems to suggest that the way to reducing poverty lies in more political will by the poor to ensure free and fair elections to elect political officers who will cater to their welfare and wellbeing, however this requires more political consciousness.

b. The Theory of Personal Income Distribution (Size Distribution of Income)

This is a theory of income inequality and it provides an organizing framework to determine the channels through which economic variables are transmitted into channels in poverty rates using the labour market.

According to the marginal productivity theory of labour, the income received by labour is due to their marginal productivity. According to this theory, the majority of families rely on labour market earnings for most of their income, such that a rise in unemployment may result in a large income decline, especially among those whose income is low. Thus the theory predicts a positive relationship that may be mitigated by government transfer payment that reduces the role of earned income.

With respect to inflation, it is well known that during inflation those who depend on fixed income payments suffer, especially as they experience a reduction in real income. The theory therefore suggests that policies aimed at eradicating poverty should reduce inflation, inequality and deal with the problems of unemployment.

c. The Neoclassical Dependence Model

This theory attributes the existence and continuance of underdevelopment primarily to the historical evolution of a highly unequal international capitalist system of rich country-poor country relationships. The coexistence of rich and poor nations in an international system dominated by such unequal power relationships renders attempts by poor nations to be self-reliant and independent difficult. Certain groups in the developing countries (military rulers, political elites, landlords, etc) who enjoy high incomes, social status and political power constitute a small elite ruling class whose principal interests, knowingly and unknowingly, are in the perpetuation of the international capitalist system of inequality and conformity in which they are rewarded. Thus, if poverty is to be eradicated, the economic, social and financial mechanisms which are manipulated by people to accentuate the situation of wealth for some few and poverty for the majority must be denounced. This implies that those in government must be ready to use political will and apparatus to make policies for the good of the majority and not for the few if poverty is to be reduced.

More so, underdevelopment is seen as being externally induced by conditions placed on the developing countries by the development countries, especially with regard to borrowing and repayment, which further distorts the balance of payment records of the developing countries.

Conceptual framework

Poverty is very difficult to define, because it can be defined from different perspectives, which makes it multi-dimensional. It could be seen from the environmental, climatic, ecological, historical, cultural or, most commonly, the income perspective.

According to the Central Bank of Nigeria (CBN, 1999), poverty is a state in which the individual is not able to cater adequately for his or her basic needs of food, clothing and shelter. Also, it is the inability to access social and economic infrastructure such as education, health, potable water and sanitation and consequently limits the chance of advancing the individual's welfare to the limit of his or her capabilities.

Poverty, in Ogwuma's (1999) opinion, is a word which vividly describes the deplorable living conditions of individuals and communities in a state of economic and social deprivations. By this definition, poverty could denote when people are economically deprived, that is have low access to the basic necessities of life.

Olayemi (1995) posits that the poor have no (or limited) access to the basic necessities of life such as food, clothing, decent shelter; are unable to meet social and economic obligations, lack skills and gainful employment, have few, if any, economic assets and sometimes lack self-esteem.

A comprehensive and more acceptable definition of poverty is the one given by the World Bank (1996). Poverty is depicted as a state where an individual is not able to cater adequately for his or her basic needs of food, clothing and shelter, unable to meet social and economic obligations, lacks gainful employment, skills, assets, self-esteem and has limited access to social and economic infrastructure such as education, health, potable water and sanitation, and therefore has limited chances of advancing his or her welfare.

Egunjobi (2014) opined that the most pathetic feature of the Nigerian society is that the majority of her members are living in a state of destitution while the remaining relatively insignificant minority are living in affluence. She further stated that these skewed economic relations do not reflect the geographic spread of resource endowments rather they are a product of classical greed, injustice and selfishness, which are beyond any economic principle.

Empirical review

Using a small open macroeconomic model to undertake a macro econometric analysis of economic growth, unemployment and poverty for the period 1970 - 2010 on Nigerian time series data, Omojolaibi (2012) discovered that economic growth has exacerbated rather than alleviated poverty and unemployment in Nigeria. This result is an indication that economic growth is a necessary but not a sufficient condition for reduction of poverty and unemployment. He then recommended creating a favourable environment where the poor can actively participate in the economic process in Nigeria.

Analysing at the macro level, the relationship between growth, poverty and inequality in Pakistan using data from 1979 to 2002, Jamal (2006) discovered that there was a positive relationship between GDP per capita and income inequality and that the state of inequality was made worse by sectoral wage gap and terms of trade. He concluded that the low level of income contributed to reduction in inequality. He recommended the adoption of policies that will control and reduce poverty and inequality.

Chani et al. (2011) investigated the relationship between economic growth, inflation and poverty in Pakistan, making use of the ARDL testing approach. The results showed that a long-run relationship exists between the variables: poverty, economic growth, inflation, investment and trade openness, over the period 1972-2008. Inflation positively impacted on poverty while economic growth and investment negatively affected poverty. Trade openness however insignificantly affected the level of poverty. The short-run analyses showed that economic growth had negative and inflation had positive impact on poverty while the effects of investment and trade openness on poverty were not significant.

Egbe and Awoyemi (2011), in their study, analysed the impact of some macroeconomic policies on poverty in Nigeria during the period 1980-2002. The macroeconomic variables used were gross domestic product, inflation, unemployment, government expenditure debt/GDP and import/GDP ratio. In analysing the data, two regression equation models based on poverty and GDP were used. The results showed that policies and programmes based on macroeconomic variables have not addressed the upward trend of poverty in the country.

The objective of the study carried out by Hazoor and Safdar (2012) was to investigate the impact of different macroeconomic variables on the welfare of the poor in Pakistan for the period 1981-2010. The macroeconomic variables analysed are inflation, GDP, population growth, major crops, minor crops, livestock and per capita income. The study revealed that population growth rate and inflation positively impacted on poverty while the other variables negatively impacted on poverty. The study therefore concluded that in the long run, reduction in poverty in Pakistan will be driven by changes in macroeconomic variables.

Pierre Richard's (2002) paper was on macroeconomic adjustment of the poor: analytical issues and cross-country evidence. The cross-country regression analysis showed that there is a link between poverty and macroeconomic adjustment via the use of some macroeconomic and structural variables. Evident from the results is that negative growth rates, income inequality and illiteracy tend to increase the level of poverty while reductions in output growth and real exchange rate tend to reduce poverty level.

According to Kashi and Shahiki Tash (2014), level of poverty is significantly determined by macroeconomic variables such as inflation, government expenditure and unemployment rate. Thus the aim of their paper was to investigate how macroeconomics variables; economic growth, government expenditure, unemployment and inflation affect the level of poverty in the Iranian society. The findings indicated that economic growth has significant effects on poverty in Iran. While there is a negative relation between poverty and growth, unemployment and inflation have positive effects on poverty. Furthermore, social security expenditure relating to government expenditure has no meaningful effect on poverty. In this study, the bootstrap technique was used to check the validity of the results. It was

recommended that the Iranian government should apply a right combination for allocation of credits and resource distribution in order that economic growth and poverty reduction can be achieved.

Abula and Adebayo (2016) conducted an economic evaluation of the effectiveness of fiscal and monetary policies as tools for poverty reduction in Nigeria using time series data from 1990 – 2014. The ordinary least squares result showed that government expenditure, interest rate and tax contribute to poverty reduction positively but not significantly, while the contribution of money supply is significant and positive. The authors recommended that monetary and fiscal policies should be complementary and effective if the standard of living is to improve.

The literature reviewed shows that sound monetary and fiscal policies and implementation strategies are needed to eradicate poverty. The most common independent variables used to regress poverty are gross domestic product, inflation and unemployment. Gross domestic product, in most cases, displayed a negative effect on poverty, though in some studies it displayed a positive effect. Inflation, however, displayed a positive relationship with poverty in all studies. Unemployment also had a positive effect in all the studies where it was used. Other non-common variables are illiteracy (positive effect), inequality (negative effect) and money supply (positive effect).

However, this study is a departure from others because it makes use of the five major macroeconomic variables according to economic theory, which are economic growth, equitable distribution of income, price stability, favourable balance of payments and full employment.

Methodology

This study made use of secondary time series data on Nigeria for the period 1980 to 2014. Econometrics was used in estimating the relationship between the selected variables on poverty and the ordinary least squares, cointegration and Granger causality are the techniques of analysis.

Poverty is an ambiguous term, multidimensional and can be viewed from different perspectives. There exist many parameters which can be used to measure poverty. Examples of such are per capita income, per capita consumption, head count ratio, poverty rate and so on. This study however

makes use of the Human Development Index (HDI) which has been calculated by the researcher. Thus, the poverty profile of Nigeria reflected in HDI figures gives a summary measure of the long-term progress in three basic dimensions of human development: Income, Education and Health; the low level or access to each of these variables represents poverty. A long and healthy lifestyle (measured by life expectancy), access to knowledge (measured by mean years of education among the adult population) and a decent standard of living (measured by gross national income per capita) will eradicate poverty.

The major macroeconomic variables which will also promote the attainment of the SDGs were selected as explanatory variables. These are equitable distribution of income, full employment, price stability, balance of payments and economic growth. These macroeconomic objectives are specified by macroeconomic theory as the major objectives of economies the world over and supported by the literature as shown above.

Model specification

The model to be estimated in this study is stated as follows:

$$POV = \beta_0 + \beta_1 BOP + \beta_2 GNI - \beta_3 INF - \beta_4 GDP + \beta_5 UNEMP + \mu$$

Poverty (POV) is proxied by Human Development Index

HDI is calculated as:

$$\text{HDI} = \sqrt[3]{Life\ expectancy\ index - Education\ index - Income\ index}$$

wherein:

dimension index is calculated as: $\dfrac{\text{actual value – minimum value}}{\text{maximum value – minimum value}}$

BOP is balance of payments

GNI is gross national income per capita as a measure of the distribution of income

INF is inflation rate as a measure of price stability

GDP is gross domestic product as a measure of economic growth

UNEMP is unemployment rate

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ & β_5 are the parameters of the model while μ is the stochastic error term.

Apriori expectation is that β_3 & $\beta_5 > 0$ while β_1, β_2 & $\beta_4 < 0$

Poverty is a state where the individual is not able to cater adequately for his or her basic needs of food, clothing and shelter. Also, it is the inability to access social and economic infrastructure such as education, health, potable water and sanitation and consequently has limited chances of advancing his or her welfare to the limit of his or her capabilities (Central Bank of Nigeria, 1999). The parameters used in constructing HDI are income, education and health, which makes it a good proxy for poverty.

Balance of payments is the record of a country's transactions with the rest of the world. The BOP values are used.

Distribution of income is another macroeconomic objective and ensuring a fair distribution of income entails reducing inequality and the gross national income per capita is used as proxy for distribution of income

Price stability is achieved when prices are relatively stable. When prices are not stable then inflation or deflation is bound to occur. In the Nigerian context, the inflation rate is a good proxy as the country experiences inflation rather than deflation.

For economic growth, the most common measure is the gross domestic product and that is what is used in this study.

Full employment is when all those who are able and desire to work get the jobs they desire and are qualified for. However, full employment is difficult to measure because such data is not readily available. Thus, the unemployment rate is a good proxy.

Estimation techniques

The econometric analysis used in this study was based on time series data on Nigeria from 1980 - 2014. The data were secondarily sourced from World Bank, Nigerian Bureau of Statistics and Central Bank of Nigeria publications.

The unit root test was applied for all variables used in the analysis in order to determine their level of stationarity and to avoid spurious regression results. This is because most data, especially when sourced from developing countries are not very satisfactorily collected and collated and so are bound to give spurious results. Moreover, most macroeconomic time series data are trended and in most cases non stationary (Engle and Granger, 1991).

Time series variables which are not stationary may have some linear combinations that are stationary. In such cases, the variables are said to be cointegrated. Engle and Granger opined that estimates of variables at their first difference are appropriate for short-run policy recommendations, however if the variables are cointegrated, then this implies that there is a long-term relationship among the variables and becomes a powerful tool of detecting the presence of economic structure. As a result, a Johansen cointegration test was carried out and the OLS regression was conducted to determine the impact of the variables on the level of poverty in Nigeria. Finally, a Pairwise Granger causality test was done to determine the direction of causality between poverty and the independent variables.

Findings and Interpretation of Results

Descriptive statistics

Table 1: Descriptive Statistics of Variables from 1980-2014

Variables	POVERTY	GDP	BOP	GNI	INFLAT	UNEMP
Mean	0.444373	3.05E+13	937105.2	224679.6	20.02927	10.21824
Median	0.445000	2.21E+13	45533.70	188583.2	12.54679	6.800000
Maximum	0.514000	6.80E+13	4891744.	352049.7	72.83550	27.40000
Minimum	0.409269	1.52E+13	-331429.7	156921.1	5.382224	1.800000
Std. Dev.	0.024216	1.62E+13	1489191.	63496.12	18.10726	7.582358
Skewness	0.879338	1.039374	1.379421	0.837234	1.582425	0.850016
Kurtosis	3.946863	2.602962	3.665490	2.226641	4.222870	2.564905
Jarque-Bera	5.651773	6.345009	11.40996	4.819400	16.30822	4.362511
Probability	0.059256	0.041899	0.003329	0.089842	0.000288	0.112900
Sum	15.10868	1.04E+15	31861578	7639105.	680.9952	347.4200
Sum Sq. Dev.	0.019352	8.68E+27	7.32E+13	1.33E+11	10819.81	1897.241
Observations	34	34	34	34	34	34

A look at the statistics of the parameters used in the model from 1980-2014 in Table 1 depicts that the level of poverty averaged 0.444373 and ranged from 0.409 to 0.514, which is quite low. Balance of payments averaged ₦937,105.2 and ranged from a deficit of -331,429.7 to ₦4,891,744. Gross national income averaged ₦224,679.6 and ranged from ₦156,921.1 to ₦352,049.7, while inflation rate averaged 20.03 per cent and ranged from 5.38 per cent to 72.83 per cent. Furthermore, GDP averaged 3.05E +13 and ranged from 1.52E +13 to 6.80E + 13 while unemployment rate averaged 10.22 per cent and ranged from 1.8 per cent to 27.4 per cent. Of note is the fact that while income and GDP have been on the increase, the rate of unemployment and inflation have also been very high.

Unit root stationarity test

The result of the unit test conducted on the variables used for analysis in the study is presented in table 2.

Table 2: Unit root test

Variables	Level ADF	1st Difference	Probabilities	Results	Inference
POVERTY	0.567263	-5.651747 (-3.653730)* (-2.957110)** (-2.617434)***	0.0000	I (1)	Stationary
INFLATION	-2.707860	-5.262925 (-3.653730)* (-2.957110)** (-2.617434)***	0.0001	I (1)	Stationary
GNP/CAPITA	0.042086	-5.243179 (-3.653730)* (-2.957110)** (-2.617434)***	0.0002	I (1)	Stationary
GDP	-0.252655	-3.094745 (-3.670170)* (-2.963972)** (-2.621007)***	0.0022	I (1)	Stationary
BOP	-1.735877	-3.577167 (-3.653730)* (-2.957110)** (-2.617434)***	0.0121	I(1)	Stationary

Variables	Level ADF	1st Difference	Probabilities	Results	Inference
UNEMP	0.492706	-4.492311 (-3.653730)* (-2.957110)** (-2.617434)***	0.0012	I(1)	Stationary

*, **, *** denotes 1%, 5% and 10% significant levels.

Source: Author's compilation.

The Augmented Dickey Fuller test was adopted to confirm if the series of variables used in this study contains a unit root. The results in the table above depict that all the variables under consideration do not have unit root and are therefore used in their first difference. This means that the results obtained are not spurious.

Furthermore, a cointegration test was carried out to determine if a long-run relationship exists among the variables and the result is presented in Table 3.

Cointegration test

Table 3: Summary of Johansen Cointegration Test

Hypothesized No. of CE(s)	Eigen value	Trace statistics	0.05 critical value	Probability
None *	0.811364	125.6492	95.75366	0.0001
At most 1 *	0.660115	72.27523	69.81889	0.0314
At most 2	0.380009	37.74253	47.85613	0.3134
At most 3	0.365006	22.44493	29.79707	0.2744
At most 4	0.127868	7.912477	15.49471	0.4748
At most 5	0.104570	3.534430	3.841466	0.0601

Notes: Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's compilation.

The cointegration test revealed that there are two cointegrating equations at 5% level of significance. Thus, we can conclude that the variables — poverty, unemployment, inflation, balance of payments, national income and economic growth — are cointegrated and a strong long-

run relationship exists among the variables of the model. The regression results are presented below.

Ordinary Least Squares result

POV = -4.732895 – 1.63E-05BOP* – 0.175593 GNI* - 4.5E-05 INF +
S.E (0.671135) (3.60E-09) (0.027836) (0.000213)

0.196675 GDP* + 0.001041UNE
(0.024715) (0.001184)

R^2 = 0.7495
Adjusted R^2 = 0.872883
F – Statistics = 46.32060*
Durbin Waston = 1.38
*Significant at 1%.

The coefficient of balance of payments depicted a significant negative relationship between poverty and balance of payments at 1% significant level. This is in line with theoretical expectations because improvements in a country's trading relationship with the rest of the world reflected in favourable BOP is expected to reduce poverty as this means more income is being realized by the government and citizens of the country.

Equity in distribution of income exerts a significant negative influence on poverty at 1% significant level. This is apriori expected because, as there is more equity in income distribution, poverty is expected to reduce. That is, as the national income is spread to reach more people and enhance standard of living, people are better able to enjoy the basic necessities of life via generation of employment and investment opportunities.

The impact of inflation on poverty is also negative though not significant. This is not as apriori expected but this may be because inflation is induced by too much money in the economy, though among the few very rich and corrupt people, as in the case of Nigeria. These monies are spent on conspicuous consumption and given the level of corruption, it may present an overall statistical picture of a general increase in consumption and reduction in poverty.

There exists a positive and significant relationship between poverty and economic growth in Nigeria. This implies that the economy though experiencing growth, the growth is not inclusive growth, and is not evenly distributed among the rich and the poor, which is why the level of poverty is still increasing. The wealth is concentrated in the hands of the very few rich while the majority are still poor.

Unemployment has a positive impact on poverty as theoretically expected. As more and more people become unemployed, especially during economic recession, there is loss of economic power and lower standard of living, as people find it difficult to make ends meet , as a result the level of poverty increases.

The OLS results also depict that the coefficient of determination R^2, which measures the power of the explanatory variables, accounts for over 87 per cent of the variations in the level of poverty in Nigeria and the Durbin Watson value of 1.38 seems to suggest the presence of autocorrelation. Also, the overall significance of the model is statistically significant at 1%. This implies a strong linear relationship between the dependent and independent variables used in the study.

Granger causality test

The pairwise causality results are presented in table 4. The results show that there exists a bi-directional causality between economic growth and poverty. This implies that changes in economic growth can cause changes in poverty while a feedback from poverty to economic growth also exists. Further, there exists a unilateral causation from poverty to balance of payments. This implies that changes in poverty influence changes in balance of payments but not vice versa. However, a causal relationship does not exist between poverty and inflation or between poverty and unemployment. Based on the above results it can be inferred that economic growth is the possible transmission channel to reducing poverty in Nigeria.

Table 4: Pairwise Granger Causality Test

S/N	Null Hypothesis	Observations	F-statistics	Probability
1	POVERTY does not Granger Cause BOP	32	6.81417	0.5868
	BOP does not Granger Cause POVERTY		1.00808	0.1156

S/N	Null Hypothesis	Observations	F-statistics	Probability
2	POVERTY does not Granger Cause GNP_PER_CAPITA	32	6.22839	0.0212
	GNP_PER_CAPITA does not Granger Cause POVERTY		3.77134	0.2954
3	POVERTY does not Granger Cause GDP	32	3.19608	0.0568
	GDP does not Granger Cause POVERTY		5.02249	0.014
4	POVERTY does not Granger Cause INFLATION	32	1.16974	0.2292
	INFLATION does not Granger Cause POVERTY		0.22037	0.5526
5	UNEMP does not Granger Cause POVERTY	32	2.04462	0.1490
	POVERTY does not Granger Cause UNEMP		1.44127	0.2543

Source: Authors compilation.

Conclusion

The conclusion drawn from the econometric analysis based on the time series data is that the macroeconomic variables can indeed influence the level of poverty in Nigeria. The significant macroeconomic variables affecting poverty in Nigeria are economic growth, GNI, and balance of payments. GNI, inflation and BOP are negatively correlated with poverty while economic growth and unemployment are positively correlated with poverty. Also, there is evidence of causality between economic growth and poverty (bilateral causality) and from poverty to balance of payments. Again, a long-run relationship does exist between poverty and the macroeconomic variables. In view of these results, efforts to reduce poverty in Nigeria should aim at reducing unemployment, inequality, increasing trading relations with other countries to Nigeria's benefit, ensuring a healthy dose of inflation and achieving inclusive economic growth. Thus, in the long run, it is possible to reduce poverty with sound macroeconomic policies.

Policy Implications

The following suggestions are made:

1. The results show that distribution of income significantly negatively impacts on poverty such that there is the need to drastically reduce the level of inequality in Nigeria so as to attain a fairer distribution of income. This can be done by ensuring that economic growth is more inclusive and income generated is spread out to reach the poor in the society. Effective fiscal policies that will, via taxation, transfer wealth from the rich to the poor should be pursued.

2. Also, balance of payments significantly negatively influences poverty, thus efforts should be made to promote exportation and reduce importation, especially of frivolous and conspicuous consumption. The government should intensify efforts towards diversification of the economy (especially in view of dwindling oil revenue) such that receipts from other countries will be over and above payments to other countries. This will assist the economy to have a more favourable balance of payments.

3. Again, the effect of unemployment on poverty is positive. As government makes efforts towards reducing unemployment, the income level is increased and economic growth can be sustained. Government policies should continue to encourage the establishment of small- and medium-scale industries and the development of entrepreneurship skills especially among the youth. This can be aided by the provision of social amenities to encourage the creation of businesses leading to employment opportunities.

4. The results show a positive and significant influence of economic growth on poverty. This implies that economic growth can significantly be used to reduce poverty though an economy can be experiencing growth while poverty continues to increase. This is possible when the growth being experienced is not inclusive, thus efforts should be made by government to formulate and implement poverty eradication policies that are directed at the poor as direct beneficiaries.

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