Empirical Appraisal of Poverty-Unemployment Relationship in Nigeria

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Abstract: The relationship between unemployment and poverty has been of interest to many a scholar with interest in development economics and social sciences. This paper is an addition to the empirical attempts to re-examine the relationship between unemployment rate and poverty incidence in Nigeria using secondary data sourced from relevant institutions to obtain major Social and Economic indicators spanning within 1980-2015. The study used Trend graph analysis, Correlation coefficient analysis and Granger causality tests in its analyses. As shown from the results, there is a positive-significant correlation between unemployment and poverty in Nigeria. More so, this was corroborated by the Trend graph analysis. It also established that unemployment granger causes poverty in Nigeria as suggests from the Granger causality tests. The economic implication of this result is that poverty is an increasing function of unemployment; and the Error Correction Mechanism (ECM) pointed that short run disequilibrium in the economy can be returned to equilibrium in the long run with a poor speed of adjustment of 6 %. In the light of these findings, this study recommends that efforts should be intensified in Nigeria towards implementation of unemployment reduction policies as this will significantly reduce poverty incidence.

Keywords: Unemployment rate; Poverty incidence; Trend graph analysis; Correlation coefficient; Granger causality; ECM.

JEL Classification: J08; J18; O15; I31.

1. Background to the Study

Nigeria moved into the twenty first century with twin problems of unemployment and poverty. Earlier studies like Gelbach and Lant (2002), Desai (2007), Christiaensen *et al.* (2002), Bigsten (2014), International Monetary Fund_IMF (2014), Sembene (2015), considered these two development challenges separately, but some rigorous analytical insights hold the trust that the two problems are not as separate as they appear. They can be regarded as Siamese twins with unemployment problem being the flip side of poverty and poverty being the flip side of unemployment. To conceive unemployment problem and poverty as twin means that the policy thrust for dealing with one can, to a reasonable extent, be effective in resolving the other.

As can be observed from the report of World Bank (2009) that about 2.8 billion persons of the world's population live on less than $2 per day, and 1.4 billion on less than $1 per day. Another estimate by United Nations Children's Fund (2012) places the true scale of poverty much higher than the World Bank, with an estimated 4.3 billion people (59 percent of the world's population) and half the world's children (1.1 billion) living in poverty; and argued that it would take 100 years to bring the world's poorest up to the previous poverty line of $1.25 a day. The most striking reality of these estimates is not only that majority of this figure as at 2016 lives in Sub-Saharan Africa (35.2%) and South Asia (13.5%) but that the Sub-Saharan Africa in which Nigeria is located has the highest incidence of poverty. About 48.5% of the population, according to United Nations Development Programme (2015), is living on less than $1.25 per day, and 69.9% on less than $2.00 per day. With a little over 988 million people living in the region, this places about 691 million Africans below the poverty line (i.e. less than $2.00 per day). Rural population in Sub Saharan Africa in 2015 according to United Nations Development Programme (2015) was measured at 623 million. The majority (about 85.8%) of poor people in the region live in rural areas (Alkire *et al.*, 2014). The rural share of poverty in the global context is particularly high in Sub-Saharan Africa and South Asia which is as high as 86%. Within the Sub-Saharan Africa, Burundi and Madagascar in the Multidimensional Poverty Index (MPI) have the most striking rural-urban divides, with rural shares of poverty at about 95 % (Alkire *et al.*, 2014).

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Rates of poverty reduction, as observed by Anowor *et al.* (2013a), have in Nigeria and in most of Sub-Saharan Africa historically been very closely related to agricultural performance particularly to the rate of growth of agricultural productivity. In simple terms, this indicates that as a country increases her agricultural productivity, the greater her chance of achieving significant reductions in poverty Anowor *et al.* (2013b). But due to a decline in per capita agricultural yields in sub-Saharan African, the rural sectors of sub-Saharan African nations are turning into breeding grounds of extreme poverty (World Bank, 2015a). The major reasons are that much of the lands are very dry and access to modern means to enrich the soil is far-fetched making it difficult for farmers to grow food for sustenance. Human development index for the Sub-Saharan African region as reported in Ogbeide and Agu (2015) was 0.475 in 2012 from 0.366 in 1980 which has been the worst since 1980 as compare to other regions. It had the lowest life expectancy rate of 54.9, lowest mean years of schooling of 4.7, and highest number of youths as well as the highest number of youth unemployment of 50% in 2012 as compared to other regions and the average youth unemployment of 12% (United Nations Development Programme, 2015).

Evidences in Nigeria show that the number of those in poverty trap has continue to increase same as unemployment also continues to increase. In 1980, poverty incidence in Nigeria stood at 28% and unemployment rate averaged to 6.4. While in 1985, poverty incidence increased to 46% and unemployment rate moved marginally down to 6.1%. However in year 2000, poverty incidence astronomically rose up to 74% while unemployment rate triply jumped up from its 1985 rate to 18.1%. Unemployment rate however dropped to 11.8% in 2004 but rose to 21.1 in 2010 and was about 25% by the end of 2016. Pathetically, trends in both problems have been pitifully increasing with marginal fluctuations in the downward trend. It is worrisome, as reported in Onodugo *et al.* (2017), that about 25 million Nigerians as at 2016 out of estimated 95 million persons in the labour force are unemployed. This figure (25 million) is almost equal to the total population of Mozambique which is about 24.9 million (Onodugo *et al.*, 2017). Going by common knowledge and experiences, an increase in the rate of unemployment will consistently reduce aggregate output and consequently retards growth. This implies that the economy will shrink and further increase the number of people below the poverty line.

In the light of this relationship, the study is motivated to ascertain the interconnectedness of these twin development problems.

2. Literature Review and Theoretical Issues

Poverty is multi-dimensional in nature. In general, poverty is commonly defined as lack of or inadequate income to purchase the basic essentials of life such as food, clothing and shelter; deprived access to basic utilities and services, environmental issues, poor infrastructure, illiteracy and ignorance, insecurity, low per capita consumption and poor health. This explains why eradicating poverty has not only been seen by policy-makers as the most important goal of human wellbeing; as it guarantees ejection of hunger, deletion of diseases, and provision of fecund lifestyle.

According to Ajakaiye and Ayodele (2000) poverty can be conceptualized as a function of education, health, child mortality and other demographic variables. Poverty according to them is non-availability of income to take care of these parameters. This definition is suitable for the type of poverty called income poverty and income deprivation. It is, however, weak because income is not the only deprivation faced by poor individuals. In addition to the above identified deprivation by Ajakaiye and Ayodele (2000) is the deprivation of the opportunity to participate in societal events like associations, membership of organizations, access to places, choice of career, choice of partner, village meetings, etc.

In order to take care of this concern, we simply define poverty as a situation in which an individual because of economic, psychological capability, social, and political deprivation cannot to an extent provide for himself/herself the necessities required at the time to support basic livelihood.

Poverty is classified based on *intensity* (i.e. absolute poverty or relative poverty) and *settings* (i.e. rural poverty or urban poverty). Absolute poverty refers to a situation where people lack the ability to purchase the basic essentials of life like food, clothing, shelter (rent), basic education etc. It is also referred to as a condition of destitution or extreme/abject poverty (Umo, 2007). According to United Nations Development Programme (2013) absolute poverty is living on less than $2.00 per day over time. Absolute poverty is more or less refers to be income-consumption based. On the other hand, relative poverty refers to as a situation where an individual provision of goods and services in comparison is lower than that of others within a contest. This means that in this case one's poverty situation is compared with others. Therefore, relative poverty has more to do with sorts of inequalities amongst people, between nations and within nations and regions. In relative poverty, what is poverty for one in More Developed Countries may be prosperity for another in Less Developed Countries So also some conditions considered uncomfortable for the metropolis and urban centers are sometimes seen as luxury in the periphery regions and the rural areas.

Rural Poverty is characterized by poor material conditions, low level of education, lack of basic infrastructures, poor health conditions, underemployment, low investment and high out-migration. Urban Poverty on the other hand is characterized by environmental degradation, overcrowded accommodation, low per capita income, and other problems associated with urban areas such as slums, ghettos and shanties (Rogers, 1998).

The causes of poverty are complex. This is so because of mutual casualty of many of the various factors impinging on poverty. According to Obadan (1997) some of the causes of poverty among which are: inadequate access to employment opportunities, inadequate physical assets, inadequate access to markets, destruction of natural

resources, lack of power to participate in design of development programmes, inadequate access to assistance for those living at the margin. It also pertinent to add ignorance as one of the causes of poverty: persons may not be able to properly access medical care, good water supply, feeding, and have been wallowing in poverty (and may have slipped into superstitious beliefs) because of lack of knowledge.

One of the most striking policy dilemmas in developing economy like Nigeria is that of unemployment. The International Labor Organisation (ILO) defines the unemployed as numbers of economically active population left who are without work but available for and seeking work, including people who have voluntarily left work (World Bank, 2015b). Although there seems to be convergence on this concept, its applications have been bedeviled with series of problems across countries. First, most published unemployment rates are recorded open unemployment. People's attitude on this varies from country to country. While this may be high in developed countries and where government is committed to resolving unemployment problem, it is likely to be very low in countries with opposite attitudes.

Unemployment can be classified based on causes which impede the full utilization of human economic skills or potentials. Some of the classifications of unemployment include:

- Frictional or search unemployment which arises basically because of imperfect job information for both seekers and employers. Therefore, the time lag before a desired matching of the "right worker" to the "right job" will inevitably bring about frictional unemployment. This type of unemployment can also be attributed to the existence of spatial friction, which implies to the fact that distance can pose a problem of labour mobility.
- Structural unemployment is the type of unemployment that occurs due to changes in pattern of labour demand and supply of labour. Therefore, this kind of unemployment refers to loss of jobs brought by changes in the structure of the economy. Such a structural change may be traced to a decrease in demand for a particular item. Structural unemployment can also be traced to technological change. For example, the use of computer for word processing or desktop publishing has rendered the skills of typist and stenographers obsolete and, therefore create unemployment for them.
- Cyclical or demand-deficient unemployment is the type of unemployment associated with the downturn of the business cycle. The basic cause of the business cyclical unemployment is a fall in aggregate demand or reduced level of total spending in the economy. The effect of a reduction in total expenditure is that the level of investment is low and industries contract instead of expanding. Consequently, many workers are laid off while new entrants into the labour market find it extremely difficult to get jobs.

There are several factors that account for high rate of unemployment in Nigeria. The first is demographic. Not only is the aggregate population increasing at a fast rate, but also the proportion of the youths (ages 15 – 24) in total population is growing, a phenomenon not usually observed in the rest of the world. The second factor pertains to increased expansion in the school enrolment, with a consequent increase in school leavers seeking jobs (International Labour Organisation (ILO), 1988). Other factors are policy- related and they are relevant to the extent to which such policies affect the pattern of development takes place and its capacity to generate jobs. Therefore, policies relating to land tenure, taxation, wages, education, technology etc have important bearing because they either promote or hamper employment generation.

According to Onwioduokit (2006) the larger unemployment problem can be attributed to high rates of population growth, sluggish economic growth, the inability of whatever growth takes place to generate a commensurate proportion of jobs, and the lack of both supply and demand sides of the labour market; hence, any strategy for solving the unemployment problem must take due account of them. It is now well established that growth, while necessary, is not sufficient to expand employment. In other words, it has to be a labour-intensive growth.

Accelerated growth of population on Nigeria's unemployment problem is multifaceted. First, it affects the supply side through a high and rapid increase in labour force, relative to the absorptive capacity of the economy. Second, the increase in the number of children in the population implies a serious burden on the rest part of the population, as there is a high dependency ratio. Other supply-side factors, which seemed to be major causes include what is termed inappropriate school curricula and the lack of employable skills (Hollister and Goldstein, 1994).

Unarguably, political and economic deprivation as stressed by Akpuru-Aja (2007) reflect loss of faith in the political community and predisposes the individual to join a movement that challenges the authorities perceived as being responsible for their woes. These are often the consequences of unemployment and poverty. Where expectation does not meet attainment in comparison with other sections of the society, the general tendency is for the aggrieved people to confront those in authorities whom they hold responsible for frustrating their ambitions and aspiration as a people.

3. Methodology
3.1. Theoretical Framework

The theoretical framework of this study is based on the work of Obadan (1997), which submitted that one of the causes of poverty among others is inadequate access to employment opportunities. This theory was supported by Onwioduokit (2006), which states that one of the leading causes of poverty in Nigeria, as elsewhere in Africa, is the shortage of opportunities for gainful employment.

3.2. Model Specification

To pursue the set objectives, the study adopts the multiple regression model specified below:

$POV_t = f (UNE_t, POPgwt_t,)$ …………………………………………. (1)

Where:

POV_t = poverty incidence in Nigeria for period t

UNE_t = unemployment rate in Nigeria for period t

$POPgwt_t$ = population growth rate in Nigeria for period t

The linear function to be estimated is then given as follows:

$POV_t = \hat{\omega}_0 + \hat{\omega}_1 UNE_t + \hat{\omega}_2 POPgwt_t + \varepsilon_{1t}$ ……………………………… (2)

Where:

ε_t = a stochastic error term, assumed to be independently and normally distributed.

The a priori expectations required that the parametric coefficients in (2) have the following algebraic signs $\hat{\omega}_1 > 0$, $\hat{\omega}_2 > 0$.

In pursuit of the objective which is to test the direction of causality between poverty and unemployment in Nigeria, the study adopted the Granger Causality test model. The model is specified as follows:

$$\Delta POV_t = \sum_{i=1}^{n} \pi_i POV_{t-1} + \sum_{j=1}^{n} \pi_j \Delta UNE_{t-1} + \varepsilon_{2t} \quad …………………………\ (3)$$

$$\Delta UNE_t = \sum_{i=1}^{n} \Omega_i UNE_{t-1} + \sum_{j=1}^{n} \Omega_j \Delta POV_{t-1} + \varepsilon_{3t} \quad ………………………………\ (4)$$

3.3. Data Required and Sources

This study made use of annual time series data. The time series data regarding variables under study spanned from 1980 to 2015, a period of 36 years. Furthermore, data analysis was carried out using E-views 9.5 version econometric software. The major sources of data for this study include World Bank's World Development Indicators (WDI), augmented with Central Bank of Nigeria (2013) and National Bureau of Statistics (2016) data of various years.

4. Analyses of Results

By the rule of thumb and assuming every other thing remains equal we employed the Ordinary Least Square (OLS) and other time series estimation techniques to test the hypotheses in this paper. The tables below show our various results.

Table-1. Stationarity Result (Unit Root)

Variables	ADF Statistic	Critical Values	Order of Integration
POV	-4.598729	1% = -3.6496 5% = -2.9558 10% = -2.6164	I(1) Stationary at first difference
UNE	-4.252467	1% = -3.6496 5% = -2.9558 10% = -2.6164	I(1) Stationary at first difference
POPgrwt	-5.514455	1% = -3.6496 5% = -2.9558 10% = -2.6164	I(1) Stationary at first difference

Source: Authors' Computation, 2017

From the table above, the Mackinnon critical value for rejection of unit root hypotheses indicates that POV, UNE, POPgrwt are stationary after first differencing and as such they are integrated at order one I (1).

Table-2. Johansen Co integration Test Result

Eigen Values	Likelihood Ratio	5% Critical Value	1% Critical Value	Hypothesized no of CE(s)
0.326465	20.03385	29.68	35.65	None
0.187471	6.991722	15.41	20.04	At most 1
0.004257	0.140794	3.76	6.65	At most 2

Source: Authors' Computation, 2017

*(**) denotes rejection of the hypothesis at 5 % / (1%) significance level.

Likelihood ratio test indicates two cointegrating equations at 5% level of significance. Therefore, this suggests that there will be long run relationship among the variables.

Table-3. Error Correction Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.325839	8.880531	0.261903	0.7952
POV(-1)	0.827616	0.093492	8.852278	0.0000
UNE	0.089642	0.074005	2.515168	0.0002
POPgrwt	2.686589	2.939223	0.914047	0.3680
ECM(-1)	-0.06433	0.483509	-4.27382	0.0003
R-squared	0.827012	Mean dependent var		57.17941
Adjusted R-squared	0.809714	S.D. dependent var		13.65670
S.E. of regression	5.957298	Akaike info criterion		6.517242
Sum squared resid	1064.682	Schwarz criterion		6.696814
Log likelihood	-106.7931	F-statistic		47.80764
Durbin-Watson stat	1.583512	Prob(F-statistic)		0.000000

Source: Authors' Computation, 2017

4.1. Discussion and Implications of Results

From results estimated above, objectives one which is *to ascertain the relationship between unemployment and poverty in Nigeria and three which is to empirically determine the impact of unemployment on poverty in Nigeria were addressed using the Autoregressive Error Correction model. Results showed that both unemployment* and population growth had positive relationships with poverty in the Nigerian economy within the period under review. The implication is that as unemployment increased, poverty also as well increased in the Nigerian economy. This result was further investigated with the tools of trend graph analysis and correlation coefficient analysis in appendix 1. The outcome corroborated the regression result of positive relationship.

Furthermore, increase in population growth which was our control variable in this study also led to increase in poverty incidence in the Nigerian economy. One factor that could support this result is that an increase in population growth translates to increase in the labour force and an increase in labour force without corresponding job opportunities leads to increase in unemployment and corresponding increase in poverty.

In terms of objective three, the result showed that unemployment had significant impact on poverty as a unit increase in unemployment led to 0.089 units increase in poverty. The implication is that unemployment is both a necessary and sufficient condition for the presence of poverty in Nigeria. Furthermore, the lag of poverty incidence (POV-1) was statistically significant. The result therefore, showed that a unit increase in previous poverty incidence led to approximately a unit increase in the poverty incidence in the Nigerian economy within the period of study.

From the results, objective two which was *to test for the direction of causality between unemployment and poverty in Nigeria* was addressed using the Granger Causality Test. The result contained in the appendix 2 showed that unemployment granger causes poverty in Nigeria. The implication of the result is that unemployment is one of the causes of poverty in Nigeria. This result supports the submission of Obadan (1997) which opined that one of the causes of poverty among others is inadequate access to employment opportunities.

The Error Correction Mechanism (ECM) of the error correction model result was negative and statistically significant, implying that a long run relationship exists among the variables. It also showed that if there is short run disequilibrium in the economy, in the long run the economy can return to equilibrium with a poor speed of adjustment of 6%.

Finally, the F-statistic (47.80764) was statistically significant at 5% level of significance indicating that all the explanatory variables jointly impacted on the dependent variable. The coefficient of determination (R^2) which is the explanatory power of the model showed that explanatory variables of this study were able to account for approximately 83% of the variations of the dependent variable.

5. Summary and Recommendations

This study on the empirical appraisal of Poverty–Unemployment relationship in Nigeria spanning from 1980 to 2015 established a positive and significant relationship between unemployment and poverty in Nigeria using Autoregressive Error Correction Model, Trend graph analysis, Correlation coefficient analysis and Granger causality tests in its analyses established that unemployment is one of the causes of poverty in Nigeria. This result is inconsonance with development theories which have acknowledged the nexus between unemployment and poverty.

Thus, study therefore recommended that stakeholders in Nigerian and other agencies should intensify efforts geared towards implementation of unemployment reduction policies as it will have significant impact on poverty reduction.

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Appendix 1

Correlation Matrix

	UNE	POV
Pearson correlation Sig (2-tailed) UNE N	1.0000 34	0.5620* 2.042 34
Pearson correlation Sig (2-tailed) POV N	0.5620* 2.042 34	1.0000 34

*Correlation is significant at 0.05 level (2-tailed)

Pairwise Granger Causality Tests

Date: 03/16/16   Time: 14:48
Sample: 1980 2014
Lags: 4

Null Hypothesis:	Obs	F-Statistic	Probability
UNE does not Granger Cause POV	30	6.97368	0.00098
POV does not Granger Cause UNE		1.12799	0.37017

Appendix 2

Unemployment Rate & Poverty Incidence Trends