Abstract

Aim/purpose – This study investigates the links between unemployment, poverty and economic growth in Nigeria between the periods, 1985-2015.

Design/methodology/approach – The paper employed the Augment Dickey Fuller test for unit root test, Johansen cointegration for cointegration, Ganger causality for causality test and Error Correction Model to establish the short-run links between the variables.

Findings – The unit root test result revealed that the variables trend with time indicating their failure of integration at level. However, they were found to be stationary at first difference. The causality result revealed that there is no causal relationship between unemployment, poverty and growth in Nigeria. Similarly, the cointegration results showed that there is no long-run relationship between unemployment, poverty and economic growth in Nigeria. The short-run parameter estimates indicated that unemployment has a negative and significant relationship with growth. However, the coefficient of the interaction between unemployment and poverty is positive and significant at the conventional level.
Research implication/limitations – This study suggests that the output growth in the country will occur even if there are poor people as defined in absolute terms. The economy will still expand even if the number of poor people increases. This is also the case in the short run, revealing that the economy has grown even though over the years, the numbers of poor people have increased. Thus, there is a need for stable macroeconomic policies that would ensure equal distribution of income so that the poor also benefit from the country’s growth.

Originality/value/contribution – This study empirically examines the contribution of output growth towards employment generation and poverty reduction using data sets from the Central Bank of Nigeria, National Bureau of Statistics and World Bank.

Keywords: poverty, unemployment, real output growth, Nigeria.

JEL Classification: E24, E64, F43, F63.

1. Introduction

There are divergent views on the effects of unemployment and poverty on economic growth. Scholars like Bardhan (1973), Griffin & Ghose (1979), and Aigbokhan (2000), have argued that economic growth which is supposed to be a stimulus to unemployment and poverty reduction has contributed to even worse economic and social outcome. They further argued that it exacerbates the conditions that lead to poverty and vulnerability due to the failure of the government to address the ever increasing rate of unemployment in the country by considering the number of fresh graduates produced yearly in all the tertiary institution across the country. A high level of unemployment is one of the critical socio-economic problems facing Nigeria. As the labour force of the Nigerian economy continue to grow with her growing number of graduates in thousands yearly, the labour market is not adequate to absorb the rising number of unemployed youth. Consequently, many Nigerians are faced with the problem of unemployment.

More so, the fortunate ones among the unemployed youths are likely to be underemployed, underpay while working for longer hours, and engage in hazardous jobs. This situation has resulted to a number of socio-economic, political and religious challenges which has increase the number of poor in the country. For instance, Tella & Alimi (2016, pp. 2) noted that “the country’s achievement toward halving the number of people living less than $1.90/day and $3.10/day as indicated in the Millennium Development Goals (MDGs) is not impressive as she recorded an increase from 46.01% and 71.3% in 1985 to 53.47% and 76.46% in 2009 respectively”. Despite the significant growth in real output in
the recent years, it has failed to create jobs (Maku & Alimi, 2018) and reduce human-capital poverty. Although Nigeria’s economy is projected to continue growing, poverty is likely to get worse as the gap between the rich and the poor has continued to widen. Kale (2012) has termed the Nigerian poverty as a paradox since the output grows with the proportion of Nigerians dwelling in poverty yearly.

There is plenty of study that has quantitatively analysed unemployment, poverty and economic growth in Nigeria. For instance, Okoroafor & Nwaese (2013) in their research work on poverty and economic growth in Nigeria between 1990 and 2011 have posited that there is a zero correlation between poverty, discomfort index and economic growth in Nigeria. Akeju & Olanipekun (2014) have studied unemployment and economic growth in Nigeria with the Okun’s law and shown that a negative relationship exists between unemployment and economic growth. Poverty and unemployment have continued to be core problems facing the economy, likewise other African countries. It has led to human denial of choice and opportunities for living tolerable life (United Nations, 1997) amid plenty. More so, the number of unemployed youth in Nigeria keeps increasing while the gap between the rich and the poor keep widening. On this note, this study re-investigates the link between unemployment, poverty and economic growth in Nigeria between the periods of 1985 to 2015. Furthermore, we investigate the nexus of unemployment, poverty and economic growth in Nigeria by finding a long run and causal relationship among unemployment, poverty and economic growth.

This paper is arranged into five parts. The first section presents the introductory aspect of the study while empirical review of past studies was presented in the second section. The third section provided the methodology, fourth section presents the results and discussion whereas the concluding part is shown in the last section.

2. Literature review

We review relevant studies that have evaluated the links between unemployment, poverty and growth using different data sets varying from panel, cross-section and time series. Empirically, Olson (1984) opined that societies with democratic system of government tend to have organised groups that advocate for unbiased distribution of income and also develop stimulus against factors that could hinder growth. Downes (1998) used the error correction model
and ordinary least square methods to examine the factors that are capable of reducing unemployment rate in Trinidad and Tobago within the periods, 1971-1996. The study found that real output and average earnings significantly influence changes in unemployment rate in both long- and short-run. It was further discovered that the coefficients output was negative while positive for real average earnings.

Lindbeck (1999) found that structural unemployment has not been disappearing in cyclical booms. His finding was in tandem with the search model theory where the equilibrium in the labour market is achieved at a point where the number of people who disengaged from work equals those who find job. The study points various factors that influence the level of structural employment which is different in time and place. Wright & Levin (2000) investigate the relationship between unemployment insurance replacement and the rate of unemployment. Using an annual panel data, the study found that unemployment insurance replacement rate is associated with higher unemployment. However, they find no significant relationship between unemployment insurance, related on employment and the real growth rate of domestic product.

Simbowale (2003) investigates the contributions of macroeconomic policies towards pro-poor growth in Nigeria. Using a secondary data sets from 1960-2000, he discovered that the relationship between growth and unemployment is weak. It indicates that people below poverty stripe do not benefit from the recorded growth over time. The author stressed further that the benefit derived by these people keep decreasing at an increasing rate. The study concluded that the output growth do not necessarily ensure pro-poor growth. With major preference to Nigeria, Bello (2013) unravels the problem of unemployment in sub-Saharan Africa. The author discovered a large number of factors that account for this problem by assessing past and present employment policy programmes formulated to tackle the problem. The result shows that economic factors hold back the performance of the programmes. Alimi, Yinusa, Akintoye, & Aworinde (2015) used impulse response, variance decomposition and Granger causality tests to investigate the macroeconomic implication of fiscal policy in Nigeria between 1970 and 2013. The findings revealed that fiscal policy tools have greatly impacted on macroeconomic performance in Nigeria.

Ajekomobi & Ayanwale (2005) investigate the education student enrolment and linkage with unemployment and economic growth in Nigeria using annual data from 1970-2005. The dataset comes from several issues of central bank of Nigeria annual reports and statement of account federal ministry of education
Unemployment, poverty and economic growth in Nigeria

and national university commission (NUC). The result shows that government funding is not stable and predictable, likewise, its capital and recurrent financing since 1970 is low which takes a small proportion of the country’s budget. Maku & Alimi (2018) examine how fiscal policy tools influenced employment creation in Nigeria using annual data sets within the periods of 1980 to 2015. Tax revenue and government expenditure were employed measures of fiscal tools while the employment level at rural, urban and national were considered. The Engel Granger cointegration test results suggest that there exists a long-run relationship between fiscal policy instruments and employment level in Nigeria. The findings from ordinary least square method shows that employment generation is positively influenced by government spending and manufacturing output. This indicates that there is a reduction in unemployment rate due to an increase government spending and output from manufacturing industry in Nigeria. The coefficients of tax revenue and agricultural output were negative, suggesting that they do not influence employment level positively.

3. Methodology

3.1. Data and model specification

Data are collected from secondary sources from National Bureau of Statistics (NBS), Central Bank of Nigeria (CBN) statistical bulletin, volume 28, 2017 and World Bank (2017). This study specifies a functional linkage among unemployment, poverty and economic growth. For this study, the unemployment rate, absolute value of poverty rate in Nigeria was adopted. Thus, the dependent variable is real gross domestic product per capita (RGDP) while unemployment and poverty are the explanatory variables. The focus is to examine the linkage among unemployment, poverty and economic growth in Nigeria. The model is adapted from a simple open macroeconomic model stated as:

$$\text{RGDP}_{\text{PC}} = f (U, PV)$$ (1)

where:

\( \text{RGDP}_{\text{PC}} \) = real gross domestic product per capita,
\( U \) = unemployment rate,
\( PV \) = poverty.
The model specification in a stochastic form is stated as:

\[ \text{RGDPPC} = \alpha_0 + \alpha_1 U + \alpha_2 PV + \mu \]  

(2)

where:
RGDPPC = real gross domestic product per capita,
U = unemployment rate,
PV = poverty rate,
parameters \((\alpha_1, \alpha_2) < 0\),
\(\mu\) = error term.

The real gross domestic product per capital is a measure that reflects the value of goods and services produced in a given year per person in the country. It is used to capture economic growth in this study. Thus, the log-linear specification model is as follows:

\[ \ln\text{RGDPPC} = \alpha_0 + \alpha_1 U + \alpha_2 PV + \mu \]  

(3)

3.2. Estimation technique and data sources

The study tests the stationarity level using the Augmented Dickey Fuller (ADF) technique of estimation. The Granger causality test is used to check for causality between two variables. This is used to test for a causal relationship between external debt and economic growth. The conventional rules indicate that there is a causal relationship if the probability value is between 0.01 and 0.05. The Johansen Maximum Likelihood by Johansen & Juselius (1990) is used to test the long-run relationship between the variables since it is solely suitable for strictly I(1) stationary variables. The error correction model (ECM) approach is employed in estimating the specified model.

Unemployment measures the percentage of unemployed person to the total labour force, poverty is measured by the total number of people living below US$1.90 a day as a percentage of population and economic growth is measured by real gross domestic product per capita. The data were sourced from the database of the Central Bank of Nigeria statistical bulletin (2017), National Bureau of Statistics (2018) and the World Bank (2017).
4. Results and discussion

4.1. Descriptive statistics

The table below describes the behaviour of the series – poverty rate, unemploy-ment and gross domestic product employed in studying the relationship between poverty and growth in Nigeria.

Table 1. Descriptive Statistics

| Specification | Real GDP per capita | Unemployment | Poverty rate |
|---------------|---------------------|--------------|-------------|
| Mean          | 12.389              | 11.323       | 55.771      |
| Median        | 12.207              | 11.9         | 58.6        |
| Maximum       | 12.862              | 29.7         | 73.9        |
| Minimum       | 12.061              | 1.9          | 34.9        |
| Std. Dev.     | 0.2792              | 8.1845       | 12.877      |
| Skewness      | 0.5990              | 0.7532       | -0.3693     |
| Kurtosis      | 4.9183              | 2.5953       | 1.7909      |
| Jarque–Bera   | 4.9183              | 2.5953       | 1.7909      |

Source: Own computation (2018).

As shown in Table 1, the highest unemployment rate recorded within the period of study is 29.7%, while that of poverty rate is 73.9%. The standard deviation of poverty rate, is the highest, showing high variation in poverty rate in the country over time, while standard deviation in unemployment is observed to be lower than that of poverty rate. Real GDP per capita presents an exciting feature also, the highest real GDP, in logged form 12.3889, representing about ₦249,756.6, the highest due to GDP rebasing. The standard deviation in GDP per capita is also high, a scenario that can be explained by the GDP rebasing exercise, allowing the recalculation of GDP per capita figures from 2010.

4.2. Granger causality test

The Granger causality test result shown in Table 2 reveals that there is no causality between poverty and growth on one hand and growth and unemployment on the other hand.

Table 2. Pairwise Granger Causality Test

| Direction of causality | Null hypothesis | F-Statistic computed | 5% critical value | Decision          |
|------------------------|-----------------|----------------------|-------------------|-------------------|
| Poverty to growth      | No causality    | 2.42205              | 0.1101            | Accept null hypothesis |
| Growth to poverty      | No causality    | 0.16123              | 0.852             | Accept null hypothesis |
| Unemployment to growth | No causality    | 1.21377              | 0.3147            | Accept null hypothesis |
| Growth to unemployment | No causality    | 1.639                | 0.2152            | Accept null hypothesis |

Source: Own computation (2018).
4.3. Unit root test

Testing for the stationarity of the series –for the presence of unit root, the Augmented Dickey–Fuller (ADF) and Phillips–Perron tests were employed. Table 3 shows that all the series are integrated of order one (1) at first difference.

Table 3. Result of Unit Test Result

| Variables (all in log) | ADF levels | ADF 1st difference | PP levels | PP 1st difference | Decision |
|------------------------|------------|---------------------|-----------|-------------------|----------|
| GDP                    | -1.9310    | -3.8272***          | -1.5828   | -3.0831***        | I(1)     |
| Poverty rate           | -1.4249    | -3.9939***          | -1.6933   | -3.9939***        | I(1)     |
| Unemployment           | -2.2463    | -5.0033***          | -2.2362   | -5.0110           | I(1)     |

* Denotes statistical significance at 10%, ** denotes 5% and *** denotes 1%.
Source: Own computation (2018).

Stationarity at first difference therefore implies that the estimation cannot be done at level. However, as submitted by relevant studies, there is a likelihood of the series converging in the long-run co-integrating in the long-run, even though the series are not stationary. This possibility thereby informs the need to carry out a co-integration test presented in Table 4.

4.4. Co-integration test

The Johansen system co-integration test is conducted to check if there exists a long run relationship amongst the series despite their non-stationarity at levels. Table 4 shows that there is no statistically significant long-run relationship between growth, poverty rate and unemployment in Nigeria, when tested at 5% level of significance.

Table 4. Co-integration test

| Hypothesized No. of CE(s) | Eigen value | Trace statistic | 0.05 critical value | Prob.** |
|---------------------------|-------------|-----------------|---------------------|---------|
| None                      | 0.433663    | 28.69170        | 29.79707            | 0.0666  |
| At most 1                 | 0.328316    | 12.20327        | 15.49471            | 0.1474  |
| At most 2                 | 0.022577    | 0.66239         | 3.841466            | 0.4158  |

* Denotes rejection of the hypothesis at the 0.05 level.
** Mackinnon-Haug-Michelis (1999) p-values.
Note: Trace test indicates no co-integration at the 0.05 level.
Source: Own computation (2018).
The result shows that there is no long-run relationship between growth and poverty rate. Proceeding from here, we then seek to study if there exist short-run relationship amongst the variables studied and in particular, by interacting poverty rate and unemployment, since unemployment has been agreed to be a factor that can induce poverty to impact on economic growth.

Table 5. Regression result

| Variables                  | Coefficient | Std. Error | t-Statistic | Prob.  |
|----------------------------|-------------|------------|-------------|--------|
| DLPOV_RATE                 | 0.364566    | 0.748417   | 0.487117    | 0.6303 |
| DLUNEMP                    | -0.802873   | 0.210598   | -3.812346   | 0.0008 |
| DLUNEMP*DLPOV_RATE         | 7.292373    | 3.452903   | 2.111954    | 0.0445 |
| CONSTANT                   | 0.057346    | 0.056497   | 1.015024    | 0.3194 |
| R-squared                  | 0.392721    |            |             |        |
| Adjusted R-squared         | 0.32265     |            |             |        |
| F-statistic                | 5.604639    |            |             |        |
| Prob. (F-statistic)        | 0.004217    |            |             |        |

Source: Own computation (2018).

4.5. Regression estimates result

Table 5 shows the result, employing the Ordinary Least Squares (OLS) estimation technique on the first differenced series in the model, thereby capturing the short run relationships amongst the variables. The result shows that poverty rate, though in sync with a priori is not statistically significant in determining economic growth even at 10%. The unemployment rate, contrarily, revealed to be negatively related to growth in Nigeria is found to be statistically significant at 1% in the short run.

The interaction term explains how unemployment-induced poverty affects growth in the country. Interestingly, the table shows that poverty induced by unemployment significantly impact on economic growth in the short run, while also showing a positive relationship.

The Durbin–Watson statistic of 2 suggests the acceptance of the null hypothesis of no serial correlation, while the low R-squared of 39% reflects the omission of important variables in the model. The R-squared shows that 39% of the variation in growth is explained by explanatory variables captured in the model while the remaining 51% is explained by variables not captured in the model. This is quite expected since the study merely estimated the relationship between growth, poverty, and unemployment. However, the statistically significant F-statistic shows the joint significance of the explanatory variables in ex-
plaining the growth in the model. Based on these criteria, it is concluded that the model is well-behaved and appropriate for explaining the relationship between growth, poverty, and unemployment.

4.6. Discussion of findings

Based on the broad objective of this study which is to investigate the link between unemployment, poverty and economic growth in Nigeria the authors, in providing answers to research questions earlier raised, found that there is no long-run relationship between poverty and economic growth in Nigeria in the period covered, implying that growth in the country will happen even if there are poor people as defined in absolute terms. The economy will still expand even if the number of these people increases. This is also the case in the short run, revealing that the economy has grown even though, over the years, the numbers of the poor have increased. Instructively, however, the study finds that unemployment-induced poverty though, positive, is a significant determinant of growth in the country in the short run, but not in the long run, while unemployment shown to have negative relationship with growth is a significant determinant of growth in the short run but not in the long run. This can be seen in the related study carried out by Aiyedogbon & Ohwofasa (2012) on poverty and youth unemployment in Nigeria within the period of 1987 and 2011. The fact that the variable is significant means that the impact was felt in the system. There is no effect of unemployment and poverty on the Nigerian economic growth. The article establishes that poverty rate over time has not slowed growth, measured by gross domestic product (GDP) in the country, and that poverty induced by lack of jobs can be very impacting on growth in the country. Showing the link that exists between unemployment, poverty and economic growth in Nigeria, the study revealed that the interaction term explains how unemployment-induced poverty affects growth in the country. Interestingly, the result shows that poverty induced by unemployment has significant impact on economic growth in the short run, while also showing a positive relationship. The study revealed that there is no causality between unemployment and poverty and economic growth in Nigeria. As seen in the Granger causality test result, there is no causality between poverty and growth on the one hand and growth and unemployment on the other hand. In other words, poverty does not Granger-caused growth in Nigeria during the period covered. Unemployment does not granger caused growth in Nigeria in the period covered while growth
does not Granger cause both poverty and unemployment in Nigeria in the period covered.

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

1) According to the results, unemployment has the correct sign (i.e. positive) and it is statistically significant. This is in agreement to our a priori expectations. It implies that when unemployment increases the level of poverty increases too in Nigeria.

2) Most important for the objective of this study is the relationship between the economic growth rate and the level of poverty. The result reveals a significant and positive relationship between the economic growth rate and the level of poverty. This implies that economic growth rate does not reduce poverty in Nigeria. It indicates that growth does not have trickle-down effect on poverty reduction which also conforms to the findings of Aigbokhan (2000).

5. Conclusions

The study examines the nexus of unemployment, poverty and economic growth in Nigeria between the periods, 1985-2015. We employed the Augment Dickey–Fuller test, Johansen cointegration, Granger causality and Error Correction Model to establish the links between the variables. The unit root test revealed that the variables trend with time indicating their failure of integration at level. However, they were found to be stationary at first difference. The Granger causality result showed that there is no causality between unemployment, poverty and economic growth. The cointegration result revealed that there is no long-run relationship between unemployment, poverty and economic growth in Nigeria. In addition, unemployment-induced poverty, though it shows a positive relationship, and also a significant determinant of growth in the country in the short run, however, unemployment have a negative relationship with growth is a significant determinant of growth. It implies that growth in the country will happen even if there are poor people as defined in absolute terms. The economy will still expand even if the number of people increases. This is also the case in the short run, revealing that the economy has grown even though, over the years, the numbers of poor people have increased. Therefore, it is important to take cognizance of the fact that the high rate of unemployment will translate into a high rate of poverty even if the value of the gross domestic products is increasing. This will result in mere economic growth without noticeable economic de-
velopment. This situation can only be sustained and improved upon if certain policy measures such as sound fiscal and monetary policy that can ensure enabling environment, attract private investment and promote productivity are put in place. Also, there is a need for stable policies that would ensure equal distribution of income so that the poor also benefits from the country’s growth.

This study has contributed to the existing literature on unemployment, poverty and growth using the short-run estimation approach. The focus of future study can be extended to cross-country cases with similar features in order to have a more robust analysis for more decisive policy inferences.

References

Aigbokhan, B. E. (2000). Poverty, growth and inequality in Nigeria: A case study. Retrieved from https://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/2262/RP%20102.pdf?sequence=1

Aiyedogbon, J. O., & Ohwofasa, B. O. (2012). Poverty and youth unemployment in Nigeria, 1987-2011. International Journal of Business and Social Science, 3(20), 269-279.

Ajekomobi, J. O., & Ayanwale, A. B. (2005). Evaluate of past policy: Measure for solving unemployment problems in Nigeria. Lagos: Jeen Publishing Company.

Akeju, K., & Olanipekun, D. (2014). Unemployment and economic growth in Nigeria. Journal of Economics and Sustainable Development, 5(4), 138-144.

Alimi, O. Y., Yinusa, O. G., Akintoye, I. R., & Aworinde, O. B. (2015). Macroeconomic effects of fiscal policy changes in Nigeria. Journal of Accounting and Management, 5(3), 85-94.

Bardhan, P. K. (1973). On the incidence of poverty in rural India of the sixties. Economic and Political Weekly, 8(4/5), 245-254.

Bello, D. (2003). Meeting the challenge of risking unemployment in employment, policy & strategy formulation mission to Nigeria. Report submitted by the ILO. 21st Oct-22nd November, Genève: International Labour Organization.

Central Bank of Nigeria. (2017). Central Bank of Nigeria Statistical Bulletin. Retrieved from https://www.cbn.gov.ng/documents/Statbulletin.asp

Downes, W. (1998). Language and society. Cambridge: Cambridge University Press.

Griffin, K., & Ghose, A. K. (1979). Growth and impoverishment in the rural areas of Asia. World Development, 7(4-5), 361-383. doi: 10.1016/0305-750X(79)90015-9

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration – with applications to the demand for money. Oxford Bulletin of Economics and Statistics, 52(2), 169-210. doi: 10.1111/j.1468-0084.1990.mp52002003.x
Kale, Y. (2012). *Nigeria: The nation’s paradox – poverty amidst plenty*. Retrieved from https://allafrica.com/stories/201202220289.html

Lindbeck, G. A. (1999). Posteritical canonical interpretation: Three modes of retrieval. In C. Seitz & K. Greene-McCreight (Eds.), *Theological exegesis: Essays in honor of Brevard S. Childs* (pp. 26-51). Grand Rapids, MI: Eerdmans.

Maku, O. E., & Alimi, O. Y. (2018). Fiscal policy tools, employment generation and sustainable development in Nigeria. *Acta Universitatis Danibius Economica, 14*(3), 186-199.

National Bureau of Statistics. (2018). Annual report. Retrieved from https://nigeria.nstat.gov.ng/page/data-analysis

Okoroafor, M., & Nwaese, C. (2013). Poverty and economic growth in Nigeria 1990-2011. *The Macrotheme Review, 2*(6), 51-63.

Olson, M. (1984). Beyond Keynesianism and monetarism. *Economic Inquiry, 22*(3), 297-322. doi: 10.1111/j.1465-7295.1984.tb00688.x

Simbowale, T. (2003). *Urban poverty in Nigeria: A case study of Agege area of Lagos State, Nigeria*. Ibadan: Department of Economics, Faculty of Social Sciences, University of Ibadan, Nigeria. Retrieved from http://www.gdnet.org/fulltext/osinubi.pdf

Tella, S. A., & Alimi, O. Y. (2016). *Grassroots banking, microcredit and poverty in developing countries: The case of Nigeria*. Paper presented at Conference “Confronting the Scourge of Poverty through Microfinance: Issues and Challenges”, scheduled for the 17th-18th of August 2016 at LAPO Institute, Benin City, Nigeria. Retrieved from https://www.researchgate.net/publication/322699157_GRASSROOTS_BANKING_MICROCREDIT_AND_POVERTY_REDUCTION_IN_DEVELOPING_COUNTRIES_THE_CASE_OF_NIGERIA

United Nations. (1997). *The report of the world summit for social development and programme of action*. Copenhagen on 12th-16th March.

World Bank. (2017). World Development Indicators. Retrieved from https://data.worldbank.org/country/nigeria

Wright, S., & Levin, B. (2000, January). *Unspecified object contexts with activity and change of state verbs*. Paper presented at the 74th Annual LSA Meeting, Chicago, IL.