

Population Growth and Unemployment Rate in Nigeria: A Causality Analysis

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Abstract

The objective of this study is to analyze the causal relationship between population growth and unemployment in Nigeria from 1990-2018. Variables included in the model are all stationary with the Johansen cointegration test revealing the evidence of a unique long run equilibrium relationship among the series in the model. Empirical evidence from the Pairwise Granger Causality test revealed bidirectional causality between unemployment rate and population growth. A unidirectional causality however exists between GDP-rate and POPGR during the reference period. On the basis of the findings of this study, a number of policy recommendations are made. Firstly, the Nigeria government should ensure that Nigeria's rising population is channeled into productive sectors of the economy where they may more fully be utilized in bringing about high rate of economic growth. Secondly, having a huge crowd of the working population without the requisite skill set is not a sufficient condition for reduction in the unemployment challenge, until the labour force is well-equipped and sound in health to contribute to economic growth. It is therefore recommended that infrastructural facilities including health and education should be provided by the Nigeria government to enable the teeming population make a valued contribution to economic growth and development. Finally, concerted efforts should be made by the Nigerian government to check population growth rate.

Keywords: Population Growth; Unemployment rate; Cyclical Unemployment

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Background to the Study

Globally, population growth rate is on the increase. In 2011, the population of the world arrived at 7 billion and it is expected to be in excess of 9 billion by 2050. In 2011, approximately 855 million people were residing in the LDCs (UNCTAD, 2011). Nigeria is one of the countries with the fastest population growth rates in the world with a rate of growth of about 2.44% as at 2016, (National Population Commission, 2016). It is also the most populous country in Africa, accounting for one in every five of Sub-Sahara Africa's people and is endowed with a wide range of natural resources. Nigeria's population according to the National Population Commission (2016) was 182.2 million. Given her high population growth, it's population is set to increase even more in the future. This is likely to have implications for Nigeria's economic growth as it affects a whole range of socio-economic variables (Olusogo, Oluwarotimi & Muazu 2018).

According to Imosi, Olatunji & Ubi-Abai (2014), the economies of the Least Developed Countries (LDCs) are typified by high level of population growth. Population is a very helpful feature when it approaches demographic dividend engaging the crowded youths of the populace in productivity. Nigeria has been experiencing population explosion in the past 50 years due to high fertility rates, quadrupling its population overtime. The concern is whether sufficient employment opportunities can be generated to absorb the country's growing pool of labour, and whether this can take place rapidly enough (UNCTAD, 2011). According to the International Labour Organization (ILO) cited in Imosi et al (2014), unemployment is the share of labour force without work but available for and seeking employment. Truly, those who are capable and enthusiastic to work but nonetheless cannot find jobs at the prevailing wage rate appear to constitute a large percentage of the labour force in third world countries.

Nigeria's GDP per capita grew by 69.7% from 1992-2009 (World Bank, 2015b) cited in Anderson & Reynolds (2016). In 2014 it became Africa's largest economy after updating its gross domestic product (GDP) from a 1990 to a 2010 base year (The Economist, 2014a). Notwithstanding this growth rate unemployment levels in Nigeria have not improved much over this period. While the unemployment rate ratio fell from 6.0% in 1991 to 5.4% in 1994, it remained sustained at a moderate rate of 4.1% from 1995 to 2007 indicating some reduction in the rate of the unemployed among Nigerians before spiraling to 15.7% in 2008. The rate again oscillated to 8.9% in 2011 and rose to an alarming 15.7% and 19.1% between 2015 and 2016. Nigeria's unemployment rate rose to 23.1% of the workforce by the end of September 2018, up from 18.1% in 2017 (World Bank, 2018). According to the National Bureau for Statistics (NBS, 2018), the economically active or working-age population (15 – 64 years of age) increased from 111.1 million in Q3, 2017 to 115.5 million in Q3, 2018.

Unemployment occurs as a result of the insufficiency of jobs to meet with the growing population, even those who are employed live with the fear of being rendered unemployed due to job insecurity, economic recession and retrenchment of workers. In fact, unemployment is an issue that is central and cardinal to the social and economic life of every country (Ajie, Akpansung & Ojiya, 2018). The term 'unemployment' can be applied to any

factor of production that is idle and under-utilized. With precise application to labour, unemployment occurs when active and able-bodied men are actively seeking jobs but unable to find one. Underemployment is a variant of unemployment which arises when labour is working below full capacity or not fully utilized in production.

Unemployment has been a factor militating against the attainment of sustainable development in most third world countries and it is more prevalent among the youths. Every year, tertiary institutions turn out thousands of graduates that are unable to find jobs in the labour market. Often times, young people are employed in jobs below their skill levels, poor working conditions, and poor remuneration (as they receive a short term informal employment arrangements). Unemployment has been regarded as a global economic problem and has been tagged as a barricade to social and economic advancement especially in developing nations.

A review of literature on this field showed a lack of consensus among the findings of scholars, on whether a growing population is indicative of higher economic growth that would, in turn, translate to increasing employment. It is in line with the foregoing that this study attempted to bridge that gap and contribute to existing literature in the field. In particular in examining population growth, the study focus on population growth rate which is a major contributor to the speed by which population size grows, especially in the context of Nigeria. Thus, the main objective of this study was to examine the causal relationship between population growth and unemployment rate in Nigeria.

Literature Review

According to National Bureau Statistics, (NBS,2017) there is no universal standard definition of unemployment as various countries adopt definitions to suit their local priorities. However, all countries use the International Labor Organization (ILO) definition, or a variant of it to compute unemployment. The ILO definition covers persons aged 15–64 who, during the reference period (usually the week preceding the time the survey is administered) were available for work, actively seeking work, but were unable to find work. In Trading economics (2019), unemployment rate can be seen as the number of people actively looking for a job as a percentage of the labour force.

This study adopts the definition of unemployment rate by the Nigerian National Bureau of Statistics (2017), which, like most countries in the World, uses a variant of the ILO definition such that the unemployment is the proportion of those in the labor force (not in the entire economic active population, nor the entire Nigerian population) who were actively looking for work but could not find work for at least 20 hours during the reference period to the total currently active (labor force) population. Accordingly, one is unemployed if one did absolutely nothing at all or did something but for less than 20 hours during the reference week. Hence, the unemployment rate is calculated by dividing the unemployed population by labor force population:

$$\text{Unemployment Rate} = 100 \times \frac{\text{Unemployed Population}}{\text{Labor Force Population}}$$

Unemployment, with its economic and social implications, is one of the most pressing problems facing Nigerian policy makers as high rates of unemployment signal a deficiency in the labor market, deepening poverty incidence and spreading indecent standards of living (World Bank, 2017). In Nigeria, unemployment rates over the last three decades have been erratic, alternating between periods of very high number of unemployed (as in the 1990s), to periods of modest unemployment rate, such as those during 1970s. Unemployment in Nigeria has increased from under an average of 6% in the 1970s to over an average of 15% in the 2000s (Guegnard, *et al.*, 2005).

According to Trading economics (2014) Unemployment Rate in Nigeria has been on the increase.. In 2006 unemployment rate was 5.0% before rising to 5.3%, in 2007. Subsequently, it increased to 5.8%, 11.8%, 19.7%, 21.1% and 23.90% in 2008, 2009, 2010, 2011 and 2012 respectively. The rate of unemployment in Nigeria is represented in Figure 1.

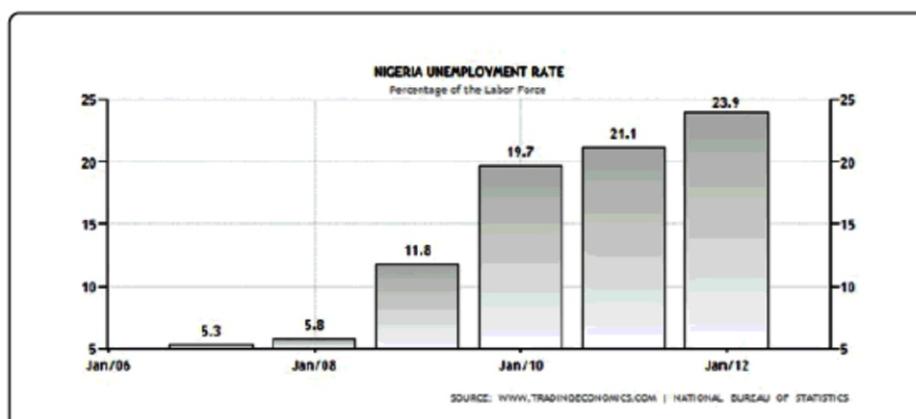


Figure1: Nigeria's Unemployment Rate.
Source: tradingeconomics.com

According to Business growth (Business dictionary, 2019), population growth is defined as “an increase in the number of people that reside in a country, state, county, or city”. To determine whether there has been population growth, the following formula is used: **(birth rate + immigration) - (death rate + emigration)**. Businesses and governmental bodies use this information to make decisions about investing in certain communities or regions.

In 1950, Nigeria had a population size of about 36 million people. By the year 2000 this number had grown to 125 million. This is a nearly fourfold increase in population size in 50 years. Okpala (1990) indicate that the population of Nigeria is growing at a rate of 3.75%/year indicating a doubling of the population every 22 years. Demographers estimated the population to be 91,178,000 in 1985. Even though population density is high (288 people/square mile), it is not equally distributed. It is highest in the south and southwest

urban areas such as Lagos (1045 people/square mile) and lowest in the northeast (75 people/square mile). Moreover rural-urban migration resulting from the growing dual nature of the economy in Nigeria continues to make urban population grow faster. In urban areas, economic development brings about higher standards of living, but, in rural areas, a subsistence economy predominates. This, coupled with rapid population growth, results in small or no growth in per capita income.

An attempt to analyze unemployment in Nigeria can be situated within two theoretical frameworks, namely the Job Search Theory of Unemployment and the Keynesian Theory of Unemployment. The Job Search theory was put forth by Terry (1998) with the assumptions that workers possess different skills sets and therefore, need to find well-paying and desirable jobs that are consistent with their skills sets; on the other hand firms need to find the most productive workers to hire but neither firms nor workers possess all the information they need about the options available to them. As a result, they (workers and firms) must engage in search. Since search is costly and time consuming both firms and workers must use some of their resources to find a good match. On the part of workers, it is assumed that they only search when they are unemployed. Hence, they are faced with an uncertain environment, just like the firms. When a worker gets a job wage offer, he /she must decide whether to accept it or continue searching for a better offer because accepting such offer means foregoing the chance of a higher wage offer later. However, continuing the search means losing the wages he/she would have earned if she had accepted the offer and started working. The search continues until the worker is indifferent between continuing the search and accepting the current job at a wage called the reservation wage. Generally, according to this theory, workers accept all job offers above the reservation wage and turn down all offers below it.

Thus the search is successful when there is a match between the needs of the workers and the firm, the worker leaves the unemployment market. Hence, the theory holds that, the wage offered by the firm is directly related to the workers' productivity, *ceteris paribus*. Suppose, that there is an economy-wide increase in productivity that workers are not aware of. Then, there is the tendency that such higher productivity can make it more attractive for the firm to increase employment by allowing it to do so by increasing the wage it offers to workers. This in turn increases the likelihood that the average worker will find an acceptable job offer and reduces the time she is likely to spend searching. Thus, the unemployment rate will decline in response to the increase in productivity. Furthermore, the search theory of unemployment is a way in which improvement in technology could have a long lasting effect on the rate of unemployment if it leads to permanent increase in the rate at which searching firms and workers find the right match. The internet has made this possible because firms now routinely post vacancies on the internet, so that workers can look for jobs in multiple locations at almost no cost, (Gomme,1998).

The second theoretical framework is encapsulated in the ideas of the British economist, John Maynard Keynes in 1936 in his publication of *The General Theory of Unemployment, Interest and Money* in which he developed Keynesian Theory of Unemployment. Cyclical

or Keynesian unemployment, also known as demand deficient unemployment, occurs when the aggregate demand in the economy is deficient or inadequate to generate full employment. It gets its name because it varies with the business cycle, though it can also be persistent such as during the great depression of the 1930's. Cyclical unemployment rises during economic downturns and falls when the economy improves. Keynes argues that this type of unemployment exist due to inadequate effective demand as when demand for most goods and services falls, less production is needed; wages do not fall to meet the equilibrium level and mass unemployment results.

The Keynesian framework, as examined by Thirlwall (1979), Grill and Zanalda (1995) and Hussian and Nadol (1997) in Jajere (2016) postulate that increase in employment, capital stock and technological change are largely endogenous. Thus the growth of employment is demand- determined and that the fundamental determinants of long term growth of output also influence the growth of employment. In the Keynesian theory, employment depends upon effective demand which results in increased output, output creates income and income provides employment. He regards employment as a function of income. Effective demand is determined by aggregate supply and demand functions. The aggregate supply function depends on physical or technical conditions which do not change in the short run, thus it remains stable. Keynes concentrated on aggregate demand function to fight depression and unemployment.

Thus employment depends on aggregate demand which in turn is determined by consumption demand and investment demand. According to Keynes, employment can be increased by increasing consumption and/or investment spending. Consumption depends on income $C(y)$ and when income rises, savings rise. Consumption can be increased by raising the propensity to consume in order to increase income and employment. Since the psychologies of the people (taste, habit etc) are constant in the short run, the propensity to consume is stable in the same time horizon. Employment therefore, depends on investment. The linkage of these two theories (search theory of unemployment and Keynesian unemployment theory) to the study is that with high population growth in the economy, the number of job searches increases which gives rise to job scarcity and hence, high unemployment rate. Government intervention (Keynes theory) is therefore required to take care of the growing unemployed population in reducing unemployment in the country.

Sunisi and Ahmad (2017) conducted a study to analyse the impact of unemployment on economic growth in Nigeria from 1970 to 2016. The study employed secondary data using Johansen co-integration and error correction mechanism (ECM) to test short run and long run impacts of unemployment on economic growth. Granger causality test was also carried out to test the causality between unemployment and economic growth. They found that there is a long run relationship between unemployment and economic growth in Nigeria. Unemployment rate has a positive impact on the economic growth both in the short run and long run. The Granger causality shows that there is a unidirectional causality running from unemployment to economic growth. They recommended vocational education in tertiary institutions and diversification of the economy as measures to correct the incidence of high unemployment.

Jajere (2016) studied the effect of unemployment on economic growth in Nigeria, modeling Gross Domestic Product (GDP) against Unemployment rate, Government Expenditure and Money supply between 1980 – 2010. The research made use of Ordinary Least Square regression technique, the result shows that unemployment does not significantly affect economic growth, but a good performance of an economy in terms of per capita growth may therefore be attributed to the other factors affecting economic growth in the country. A major policy implication of this result is that concerted effort should be made by policy makers to increase the level of output in Nigeria by improving productivity/supply in order to reduce unemployment and the prices of goods and services (inflation) so as to boost the growth of the economy. The study also recommended that government should embark on labor intensive technique of production as against capital intensive and also close the border to some extent which is the likely measure to reduce unemployment and inflation and increase domestic output level (GDP).

Adekola, Allen, Olawole, Akanbi, and Adewumu (2016) conducted a study using secondary data from Population Reference Bureau, United Nations Annex Table, International Monetary and National Bureau of Statistics to prove whether unemployment is mainly caused by demographic change in Nigeria or there are other intrinsic factors responsible for this social challenge. A comparative analysis of the population and unemployment structure of three purposively selected and heavily populated countries in three different continents- Nigeria, China and USA were undertaken. Results shows that population growth is not the only factor responsible for increase in unemployment in Nigeria as unemployment statistics is stable for U.S. and China while their populations are growing, but the reverse is the case for Nigeria as both population and unemployment are growing. Recommendations were thereafter made to address other likely factors identified.

Ditimi and Ifeakachukwu (2013) carried out a study to look at the impact of unemployment on productivity growth in Nigeria. Time series data from 1986 to 2010 were employed and the variables used were productivity growth (y) the dependent variable and the independent variables were government expenditure, capital, labour, inflation rate and unemployment rate. Co-integration and error correction mechanism were used and the finding from the study shows that unemployment and inflation has a positive effect on economic growth.

Bakare (2011) Using secondary data carried out an Econometric Analysis on the determinants of urban unemployment crisis in Nigeria from 1978 to 2008. The study found that demand for labour, supply of labour, population, inflation, capacity utilization, gross capital formation, wage rate, and private domestic investment are major determinants of urban unemployment in Nigeria.

From the framework of Keynesian Theory of Unemployment O'Nwachukwu (2016) conducted a study to examine the determinants of the rate of unemployment in Nigeria from 1980 to 2016. Unemployment rate was the dependent variable and the independent variables were Government Expenditure, Inflation Rate, First Lag of Unemployment, Population and Real Gross Domestic Product. The study made use of Ordinary Least Squares (OLS). The

result shows that Government Expenditure, Inflation Rate and Population are statistically significant in explaining changes in unemployment in Nigeria for the period under review. However, first lag of unemployment and Real Gross Domestic Product are found not to be statistically significant in explaining unemployment in Nigeria. The recommendations of the study were – allocation of higher amount of money to capital expenditure in the budget, and Monitoring awarded projects to see that they are completed. The study also recommended that technologies which require human labour to operate should be introduced in country.

Methodology

This study made use of secondary data for the period 1981 to 2018 sourced from World Bank Group, World Population Data Sheet, National Commission on Population and trading economics to analyse the relationship between population growth and unemployment rate in Nigeria using granger causality testing approach.

Causality Test

A Granger Causality Test is a statistical hypothesis test used to find out whether a given time series can be used to forecast or predict another. It was developed by Clive Granger (a 2003 Nobel Laureate) in 1969 and has been widely used in economics since then.

According to Granger (1969), If variable X Granger causes another variable Y, then the past value of X should contain information that are useful in predicting Y, over and above the information contained in the past value of Y alone. Its mathematical formulation is based on linear regression modeling of stochastic process.

A unidirectional causality exist when from X to Y if the estimated coefficients on the lagged X in the first equation are statistically different from zero as a group and the set of estimated coefficients on the lagged Y are not statistically different from zero. In the same vain, unidirectional relationship from Y to X do exist when the lagged Y in the second equation are statistically different from zero and the lagged X are not statistically different from zero in the first equation.

A bilateral causality do exist when the set of both lagged X and Y are statistically different from zero in both equations. But when the set of lagged X and Y are not statistically different from zero in both equations, we can simply say that no causal relation between the variables (Gujarati, 2012).

Model Specification

Following the methodology adopted by O'Nwachukwu (2016) in the theoretical framework of Keynesian theory of unemployment which model's unemployment Rate (UNP) as a function of Government Expenditure (GEXP), Inflation Rate (INF), first lag of Unemployment Rate (UNP_{t-1}), Population (POP), and Real Gross Domestic Product (RGDP).. This study models unemployment rate rate (Unemp-rate) as a function of percentage of working population (used as proxy for population growth rate (PopGr), and

gross domestic product growth rate (Gdp-Rate) as control variable respectively. The model having met the required and sufficient conditions for stationarity of variables being considered is specified below as:

$$\text{PopGr}_t = \sum_{i=1}^n \alpha_i \text{Unemp-Rate}_{t-i} + \sum_{j=1}^n \beta_j \text{Gdp-rate}_{t-j} + \sum_{k=1}^n \gamma_k \text{PopGr}_{t-k} + e_{1t} \quad \dots (\text{eq. 1})$$

$$\text{Unemp-rate}_t = \sum_{i=1}^n \alpha_i \text{Gdp-rate}_{t-i} + \sum_{j=1}^n \beta_j \text{PopGr}_{t-j} + \sum_{k=1}^n \gamma_k \text{Unemo-rate}_{t-k} + e_{2t} \quad \dots (\text{eq. 2})$$

$$\text{Gdp-rate}_t = \sum_{i=1}^n \alpha_i \text{PopGr}_{t-i} + \sum_{j=1}^n \beta_j \text{Unemp-rate}_{t-j} + \sum_{k=1}^n \gamma_k \text{Gdp-rate}_{t-k} + e_{3t} \quad \dots (\text{eq. 3})$$

Where PopGr is the growth rate of population, that is, percentage of working population in Nigeria while Unemp-rate is the rate of unemployment in Nigeria within the period studied. Gdp-rate is the growth rate of real GDP (used as proxy for economic growth) used a control variable to avoid the incidence of variable omission. These equations will be estimated using Granger-Causality technique.

Data Analysis and Interpretation

Trend Analysis

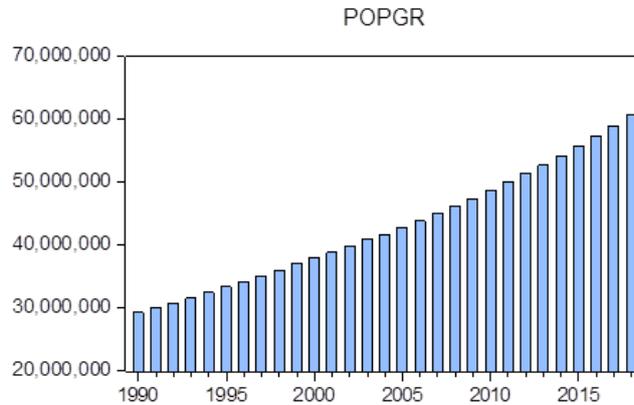


Fig. 1.

Source: E-views version 8.0

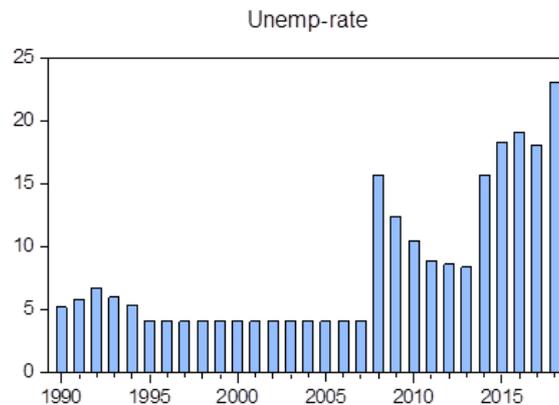


Fig. 2.

Source: E-views version 8.0

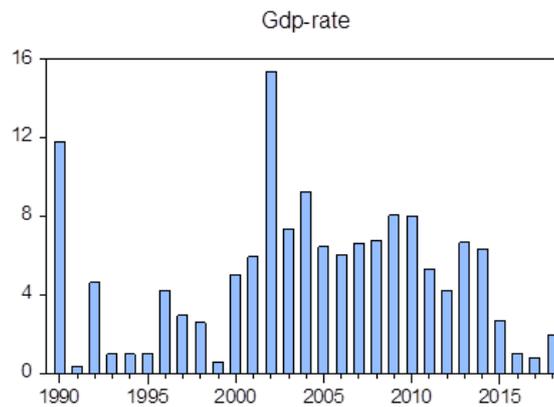


Fig. 3.

Source: E-views version 8.0

The graphs above are a depiction of the trend that existed between the three core variables (population growth rate, unemployment rate and gross domestic product growth rate) captured in the model of study. The variable population growth rate which is proxied by the percentage of working population exhibited an upward rise all through the years under reference. Incidentally, as the numbers of able-bodied men and women were on an upward trend, there was not a corresponding increase in output growth (i.e. economic growth in Nigeria), hence the rate of unemployment also maintained an upward trajectory within the study period. This is indicative of the fact that policy makers over the years has not done enough to bridge the wide gulf that existed between the working population and the unemployment challenge in country within the period under reference. Of great concern is the fact that virtually all the productive sectors of the nation's economy such as manufacturing, textile, solid minerals development including small and medium-scale enterprises has gone moribund as a result of maladministration and endemic corruption that has bedeviled the Nigerian state.

Pre-Estimation Test

As a precondition for obtaining valid and reliable result, the variables were put to unit-root test using the popular Augmented Dickey-Fuller. This test tries to examine the property of the variables. It is used to check for the presence of a unit root i.e. none stationarity of the variables. This test is carried out using the Augmented Dickey Fuller (ADF) test. This is the first test carried out in the cointegration analysis and is known as the pre-cointegration test. The ADF results are as presented below:

Table 1(a): ADF Unit Test result for UNEMP-rate

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.297339	0.0000
Test critical values: 1% level	-3.626784	
5% level	-2.945842	
10% level	-2.611531	

Source: E-views version 8.0

Table 1(b): ADF Unit Test result for POPGr

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.035333	0.0000
Test critical values: 1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

Source: E-views version 8.0

Table 1(c): ADF Unit Test result for GDP-rate

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-11.93951	0.0000
Test critical values: 1% level	-3.626784	
5% level	-2.945842	
10% level	-2.611531	

Source: E-views version 8.0

From table 1(a-c) above, the Augmented Dickey Fuller (ADF), unit root test indicated that all the variables were stationary at first differences having found to be non-stationary at their level form, Stationarity of the variables were ascertained to avoid the incidence of obtaining spurious regression results.

Furthermore, the Johansen co-integration test is applied on the series to examine whether or not co-integration exists among the variables. The results of Johansen test for co-integration is presented in table four below:

Table 3: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.688786	44.69412	29.79707	0.0005
At most 1	0.344315	13.17775	15.49471	0.1084
At most 2	0.063860	1.781725	3.841466	0.1819

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.688786	31.51637	21.13162	0.0012
At most 1	0.344315	11.39602	14.26460	0.1354
At most 2	0.063860	1.781725	3.841466	0.1819

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

From table 3 above, it is observed that Trace test statistic and the Max-Eigenvalue test indicated one cointegrating equation at 5% level of significance respectively. Based on the evidence above, the null hypothesis (H_0) which says that there are no cointegrating vectors can be safely rejected leading to the acceptance of the alternative hypothesis of the presence of cointegrating vectors. Thus, it is concluded that in Nigeria's case, the hypothesis of no cointegration among the series should be rejected, implying that a unique long-run equilibrium relationship exists among the variables PopGr, Unemp-rate and Gdp-rate between 1990-2018. In other words, they possess the characteristics that would cause them to converge in the long-run.

Having met the required and sufficient condition (for stationarity and cointegration relationship of variables being considered), the study proceeded to estimate Pairwise Granger Causality test to capture the objective of this study.

Pairwise Granger Causality Test

The direction of causality cannot be precisely established through the Johansen co-integration test, hence granger causality test is applied. Pairwise granger causality test is used to examine the causal relationship between population growth and unemployment rate in Nigeria. The findings from the causality testing are presented in table five below.

S/N	Variables causing Another	P-value
(i)	UNEMP_RATE granger causes POPGR	0.0639
(ii)	POPGR granger causes UNEMP_RATE	0.0336
(iii)	GDP_RATE granger causes POPGR	0.0078
(iv)	POPGR does not granger causes GDP_RATE	0.5810
(v)	GDP_RATE does not granger causes UNEMP_RATE	0.9712
(vi)	UNEMP_RATE does not granger cause GDP_RATE	0.4309

Empirical evidence revealed a bidirectional causality between unemployment rate and population growth. A unidirectional causality however existed between GDP-rate and POPGR. There is no causality between POPGR and GDP-RATE, etc.

Discussion of Findings

The implication of the above findings indicated that the progressive increase in working population during the period under reference is a cause for the rising unemployment rate and vice-versa. That is, as the number of able-bodied men and women with requisite skill set to work is increasing without a corresponding increase in production within the economy, the tendency is that the rate of the unemployed would keep rising. This finding is in line with the popular Malthusian hypothesis of occurrence of joblessness in a stagnant environment or economy.

One more finding worthy of note is the lack of causality from population growth rate to gross domestic product growth rate. This goes to reveal that though the country is blessed with a pool of working population, their contribution towards economic growth is insignificant. This to a large extent is not unconnected to the fact that most of the population strata under reference do not possess the requisite training and technical know-how required of a 21st century knowledge-based economy, hence the low output and an alarming rise in the number of the unemployed witnessed within the period under reference. It is to be noted that being blessed with a large population is necessary but not a sufficient condition for having a buoyant or robust economy. These findings are in line with the earlier trend analysis where population grew astronomically far and above economic growth thereby leading to a corresponding increase in the number of the employed.

Conclusion and Recommendations

The objective of this paper has been to analyse the relationship between population growth and unemployment in Nigeria. The study is aimed at investigating the phenomenon with a view to providing solutions that will facilitate a transition from research to policy outcomes. Specifically, it has sought to help analysts and policy-makers address three questions.

The study spans a twenty-eight period (1990 – 2018). Variables included in the model were all stationary with the Johansen cointegration test revealing the evidence of a unique long run equilibrium relationship among the series in the model. Empirical evidence from the Pairwise Granger Causality test revealed bidirectional causality between unemployment rate and population growth. A unidirectional causality however existed between GDP-rate and POPGR during the reference period.

On the basis of the findings of this study, a number of policy recommendations are made. Firstly, the Nigeria government should ensure that Nigeria's rising population is channeled into productive sectors of the economy where they may more fully be utilized in bringing about high rates of economic growth for the overall development of the country.

Secondly, having a huge crowd of the working population without the requisite skill set is not a sufficient condition for reduction in the unemployment challenge. Until the labour force is well-equipped and sound in health to contribute to economic growth, it is therefore recommended that infrastructural facilities including health and education should be provided by the Nigeria government to enable the teeming population make a valued contribution to economic growth.

Finally, concerted efforts should be made by the Nigerian government to check population growth rate as any population growth that occurs too fast will have diminishing returns on available facilities or create a unpleasant consequences where there is stagnant growth in economic activities.

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