

IMPACT OF UNEMPLOYMENT ON NATIONAL OUTPUT GROWTH IN NIGERIA

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Abstract

This study examined the impact of unemployment on output growth in Nigeria. Applying Augmented Dickey Fuller test indicates that all the variables were stationary at first difference except inflation rate which was stationary at level. Similarly, ARDL bound test suggests strong evidence of cointegration among the variables exist. The study concludes that unemployment impacted output growth negatively in line with Okun's law in Nigerian economy; it reveals positive impact among real gross domestic product (GDP), Federal government capital expenditure and labour participation rate. While inflation rate influence output growth negatively in Nigeria with a long run relationship exist among the variables as confirmed by the cointegrating test. Also, the value of ECM (-0.910824) adjusted by 91 (%) to ensure long-run equilibrium in 1 year and 1 month and granger causality test shows unidirectional between labour participation rate and other variables. Therefore, the study recommends that concerted effort should be made by government to increase output growth through diversification of the economy, increase her budgetary allocation to fixed capital expenditure on the real sector of the economy, minimise the negative impacts of inflation on output growth and ensure equitable distribution of income and provision of good jobs for her citizens.

Keywords: Impact, Unemployment, National Output, Growth, Macroeconomics.

INTRODUCTION

Output growth is the fundamental concept in macroeconomics. It is the real gross domestic product of any economy. Output has been the sole aim of economic activities and it is long term economic growth; that is, it is one of the most important macroeconomic goals of governments all over the world (Adarkwa, Donkor&Kyei, 2017). Nigeria is one of the countries that are endowed with enormous human and natural resources which if effectively exploited will immensely contribute to economic growth and development, thereby reducing the high rate of unemployment. These resources are scattered across the six geo-political zones of the Nigerian economy. But despite the abundant resources endowed on Nigeria by nature, its citizens are still struggling to survive due to economic hardship in the country (Khan, 2020). Unemployment is undoubtedly one of the indices of the macroeconomic goals which every government strives to achieve for the maintenance of stable domestic price level and full-employment. Macroeconomic performance is judged by three broad measures,

unemployment rates, inflation rate and the growth rate of output. Unemployment is generally seen as macroeconomic problem as well as socio-economic problem. It has been categorized as one of the serious impediments to social and economic progress. Apart from representing an enormous waste of a country's man power resources, it generates welfare loss in terms of lower output there by leading to lower income and well-being. Unemployment arise as a result of insufficient and non-availability of jobs to correspond with the growing population, even those who are employed sometimes live with the fear of being unemployed due to job insecurity and retrenchment of workers.

Unemployment remains a challenging factor for most economies in the world given its adverse effects on the nation growth. In fact, unemployment aside being a waste of human resource and hence slowing government of tax revenue in the form of income tax, it has a negative effects on the total well-being of the jobless as well as a wider social cost in the form of breeding vices such as corruption, armed robbery, cybercrimes, kidnapping, prostitution, ritual killings, drugs trafficking, human trafficking and other form of insecurity in the society. It may also result to high mortality rate, low life expectancy and poor nutrition in-take among the citizens in any economy affected by high unemployment rate (Onwachukwu, 2015).

The relationship between unemployment rate and real gross domestic product in Nigeria has proved that output growth lag behind the dragon of unemployment in the country. In addition, the trends of unemployment rate and real GDP rate have been fluctuating over a period of time. For instance, unemployment rate was 5% in 1986 while RGDP rate was only 1.8% in Nigeria (CBN, 2010). This fact showed that for over three decades, unemployment has been a challenge to Nigerian government. Besides this, it can be noticed that, by the year 2002, output growth has overtaken the unemployment rate by 21% which was greater than unemployment rate of 12.6% in the economy. This was the only period in 30 years that RGDP outshined unemployment in Nigerian. While, from the year 2002, RGDP was on a decline rate but Unemployment rate was on upward trend with its aftermaths of insecurity, armed robbery, cyber-crimes, kidnapping on a large scale, human and drugs trafficking, ritual killings and prostitutions and other social vices across the nation.

Nigeria is faced with problem of unemployment in recent time more than the previous decades, in 2016, unemployment rate reached 20% whereas RGDP was -1.67% which culminated into economic recession in the economy, where many firms laid off workers, low aggregate demand and no job opportunities for the fresh graduates in Nigeria (National Bureau of statistics, 2019).

Moreover, unemployment has reached a very alarming proportion in Nigeria, with a greater number of the unemployment being primary and secondary school leavers and university graduates and even those not attended school. This situation has recently been compounded by the increasing unemployment of professionals such as bankers, engineers, doctors, lawyers, accountants and also those do not attend school or not professional ones. The toll is within the productive segment of the Nigerian population; the recent economic recession ravaging the country has further deteriorated the unemployment situation in Nigeria. Between May 2015 to May 2016, unemployment rose by 20.9% especially youth unemployment. Official figure from the Bureau of Statistic puts the figure of unemployment rate at 23% and youth unemployment rate at 65% as at 2015 to 2016 (CBN, 2017).

By implication over 23million Nigerians are unemployed, meaning that if Nigeria's population is 190 million, then 33% of Nigerians are unemployed (Khan, 2020). Viewing this from the perceptive of the recent events in North-East especially Borno, Yobe and Adamawa and partly Taraba State where unemployment and poverty among others played a key role in the uprisings among youths.

More to that, output growth and unemployment has not been matched to provide solutions to numerous economic crises coupled with the global pandemic of COVID-19 which hit the economy badly. As from 2019 to 2020, unemployment rate has jumped 23% to 33 % which were the highest within the study period. On the other hand, output growth was 2.27% and -4.21% in 2019 and 2020 respectively. Unemployment and output growth are two vital macroeconomic goals that government strive to maintain at a steady rate in any economy. While, output growth rate is higher in advanced economies which help to minimise unemployment, inflation rate and ensure low bank lending rates for the betterment of the citizenry in such countries; in developing economies like Nigeria, output growth rate is low whereas unemployment, inflation and interest rates are high with adverse effects on the citizenry. Earnestly, unemployment possess a threat to Nigerian economy; whereas insecurity, poverty, armed robbery, cyber-crimes, human and drugs trafficking, prostitutions, persistent increased in prices of goods and services have become order of the day in the country. It therefore requires concerted efforts by individuals, firms and government to curtail the effects of unemployment on output growth in Nigeria, hence there is need to examine the impact of unemployment on output growth in Nigerian economy from 1986-2020.

Objectives of the Study

This paper sought to examine the impact of unemployment on output growth in Nigeria. The specific objectives sought to:

- i. Assess the impact of unemployment rate on national output growth in Nigeria;
- ii. Evaluate the impact of government capital expenditure on national output growth in Nigeria;
- iii. Investigate the influence of inflation rate on national output growth in Nigeria.

Research Questions

This manuscript was guided by the following research questions:

- i. What is the impact of unemployment rate on national output growth in Nigeria?
- ii. What is the influence of federal government capital expenditure on national output growth in Nigeria?
- iii. To what extent has inflation rate impacted on national output growth in Nigeria?

Hypotheses

The following hypotheses have been formulated to test the significant of the variables used in the study:

Ho₁: Unemployment has no significant impact on national output growth in Nigeria.

Ho₂: Government capital expenditure has no significant effect on national output growth in Nigeria

Ho₃: Inflation rate has no significant effects on national output growth in Nigeria.

LITERATURE REVIEW

Conceptual Clarifications

The concept of unemployment

Unemployment is often defined by the classical economists as the excess supply of labour over the demand for labour which is caused by adjustment in real wage (Pigou, 1933). The Classical or real-wage unemployment occurs when real wages for jobs are set above the market-clearing level, causing the number of job-seekers to exceed the number of vacancies (Solow (1981). In addition, Unemployment is the number of the economically active population, who are without work but available for and seeking for a work, including people who have lost their jobs and those who have voluntarily left (ILO, 2018).

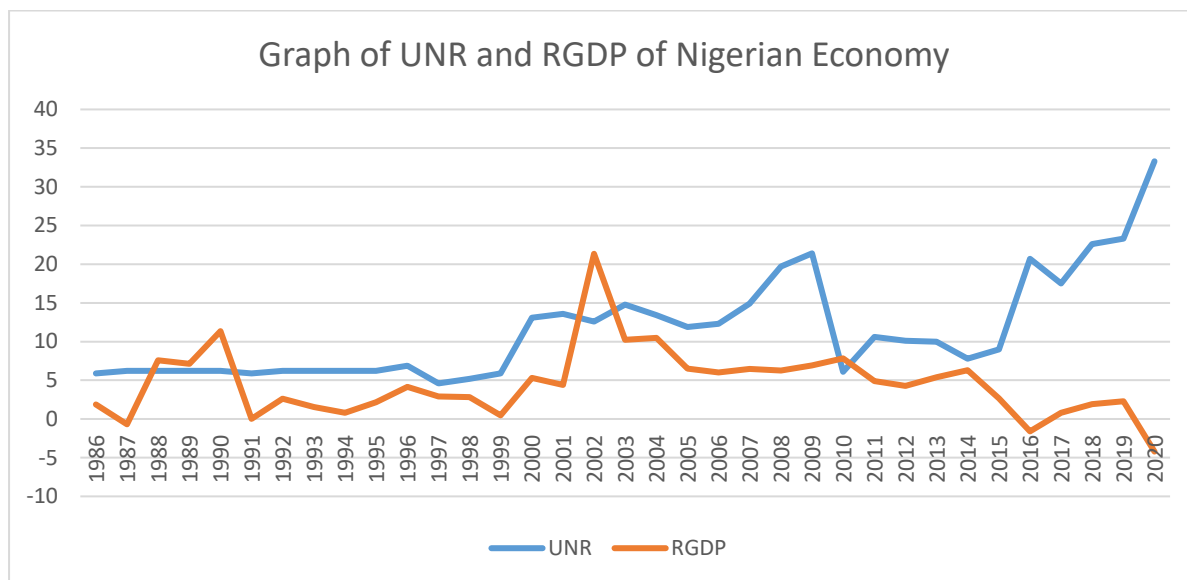
In the view of Ahuja (2011), unemployment is defined as a state of affairs when in a country there are a large number of able-bodied persons of working age who are willing to work but cannot find work at the current wage levels. People who are either unfit for work for physical or mental reasons, or don't want to work e.g. Sadhus, are excluded from the category of the unemployed. Unemployment (or joblessness) occurs when people are without jobs, and they have actively looked for work within the past four weeks. Unemployment rate is a measure of the prevalence of unemployment, which is calculated as a percentage by dividing the number of unemployed individuals by all individuals currently in the labour force. Thus, in Nigeria, unemployment rate measures the number of people actively looking for job as a percentage of labour force. Nigeria, which is the biggest black nation in the world, ought to have a very strong economy capable of employing almost all employable citizens but the unemployment rate in the nation is not only alarming but also embarrassing.

Furthermore, Unemployment remains a challenge for most economies in the world given its adverse effects on the nation. In fact, unemployment aside being a waste of human resource and hence slowing government of tax revenue in the form of income tax, it has a negative effects on the total well-being of the jobless as well as a wider social cost in the form of breeding vices such as corruption, armed robbery, cybercrimes, kidnapping, assassinations, prostitution, ritual killings, drugs trafficking, human trafficking and other form of insecurity in the society. It may also result to high mortality rate, low life expectancy and poor nutrition in-taking among the citizens in any economy affected by high unemployment rate (Onwachukwu, 2015). It can be noticed that Unemployment is an important determinant of the level of growth and development which a country can attain. Unemployment in Nigeria has resulted in more and more people who do not have purchasing power. Less consumption has led to lower production and economic growth has been hampered (Ogueze&Odin, 2015). Unemployment rate is one of the most closely watched statistics because a rising rate is seen as a sign of weakening economy that may call for cut in interest rate, A falling rate, similarly, indicates a growing economy which is usually accompanied by higher inflation rate and may call for increased interest rate in the economy. The next heading, this study can explained the types of unemployment which are frictional; structural, cyclical and seasonal unemployment for clarity of concept.

Unemployment and national output growth in Nigeria

The trends of unemployment and output growth in Nigerian economy have been fluctuating over the years. This profile of the unemployment rate and economic growth can be presented in the graphical form in figure 2 below in order to uncover its adverse effects on the economy.

Moreover, unemployment rate refers to the rate of unemployed able body of youths and other workers either voluntary or involuntary in engaging in the productive jobs while economic growth or output growth rate is the rate at which real output increase in monetary values over a period of time. In the case of Nigerian economy this economic terms of unemployment and output growth have been the contemporary issues to policymakers and economists in their analyses of economic activities in the country.



Source: CBN Statistical Bulletin and Bureau of National Statistics, 2020.

Figure 1: Trend of Unemployment and RGDP rates in Nigeria

From figure 1 above, the trend of unemployment rate and real GDP rate has been fluctuating over a period of time. For instance, unemployment rate was 5% in 1986 while RGDP rate was only 1.8% in Nigeria (CBN, 2019). This fact showed that for over three decades, unemployment has been a challenge to Nigerian government. In addition, it can be noticed that, by the year 2002, output grow has overtaken the unemployment rate by 21% which is greater than unemployment rate of 12.6% in the figure 1. This was the only period in 30 years that RGDP outshined the dragon in Nigerian economy called Unemployment. While, from the year 2002, RGDP was on a decline rate but Unemployment rate was on upward trend with aftermaths of insecurity, armed robbery, cyber-crimes, kidnapping in the large scale, human and drugs trafficking, ritual killings and prostitutions and other social vices across the nation. Furthermore, Nigeria is faced with problem of unemployment in recent time more than the previous decades, in 2016, unemployment rate has reached 20% whereas RGDP was -1.67% which culminated into economic recession in the economy, where many firms laid off workers, low aggregate demand and no job opportunities for the fresh graduates in Nigeria (National Bureau of statistics, 2019).

Moreover, unemployment has reached a very alarming proportion in Nigeria, with a greater number of the unemployment being primary and secondary school leavers and university graduates and even those not attended school. This situation has recently been compounded by the increasing unemployment of professionals such as bankers, engineers, doctors, lawyers, accountants and also those do not attend school or not professional ones. The toll is within the productive segment of the Nigeria population the recent economic recession

ravaging the country has further deteriorated the unemployment situation in Nigeria. Between May 2015 to May 2016, unemployment rose by 20.9% especially youth unemployment. Official figure from the Bureau of Statistic puts the figure of unemployment rate at 23% and youth unemployment rate at 65% as at 2015 to 2016 (CBN, 2017). By implication over 23million Nigerians are unemployed this means that if Nigeria's population is 190 million, then 33% of Nigerians are unemployed (Khan, 2020).

More to that, output growth and unemployment has not been matched to provide solutions to numerous economic crises coupled with the global pandemic of COVI-19 which hit the economy badly. As from 2019 to 2020, unemployment rate has jumped 23% to 33 % which were the highest within the study period. On the other hand, output growth was 2.27% and - 4.21% in 2019 and 2020 respectively.

Theoretical framework

There are many theories which have been postulated regarding unemployment and economic growth in the economies across globe. However, few of these theories are reviewed for this study. The theories include: Classical theory of unemployment, The Keynesian theory of unemployment and Okun theory of unemployment. The aim of this review is to provide theoretical basis for the current study.

Classical theory of unemployment

The classical economists have formulated this theory of unemployment as a result of market regulations and its implications on the economy. The leading proponents of this theory are Pigou (1933) and Solow (1981). They asserted that unemployment is product of market interference and labour demanding wage rate that is above the equilibrium rate. To solve the problem of unemployment, the economy should be allowed to do the necessary adjustment on its own because it is self-regulatory force. They believed demand and supply force can adjust the economic activities back to equilibrium to ensure full employment in the economy.

The Keynesian theory of unemployment

This Keynesian school of thought postulated that unemployment can occurs in an economy as result of market failure and its adjusting mechanism. Prominent economist John Maynard Keynes in his book titled "Unemployment, interest rate and money" debunked theory of self-adjustment mechanism of market and opined that government interventions was necessary for the economy to recovered from depression of 1930s.

Furthermore, to Keynes and his followers' unemployment exist in an economy as a result of deficiency in aggregate demand. Therefore, for the problem of unemployment to be solved there is need for government intervention in the economy. It means if government intervene in terms of aggregate spending would help the economy to adjust back to equilibrium. It is on this premise, that Keynes and his followers were able to solve the problems of unemployment in 1930s. However, in this study, it will analysis the economic phenomena to see whether theory holds ground for the Nigerian economy or not since to country is experiencing high rate of unemployment and low productivity.

The Harrod-Domar Growth Model for Economic Growth

In economic literature, this model is called capital only model. Harrod (1948) took over from Rostow, because Rostow had some unanswered questions. The model stated that saving is a certain proportion of national income and net investment is defined as the change in capital stock (K). The model further assumes that there is some direct relationship between the size of the capital stock, (K), and total GNP, (Y). This follows that any addition to the capital stock in the form of new investment will bring about corresponding increase in the flow of national output, GNP. This relationship is known in economics as the capital output ratio. If the capital-output ratio is defined as k and assumes further that the national savings ratio, s, is a fixed proportion of national output (e.g. 6%) and that total new investment is determined by the level of total savings in the economy.

METHODOLOGY

Research design

The ex-post facto research design is adopted to enable the researcher make use of secondary data in order to examine the impact of unemployment on output growth in Nigeria for the period of 1986 to 2020. The data were obtained from secondary sources because of its nature. The data were sourced from World Bank development indicators (World Bank, 2020) and Central Bank of Nigeria (CBN, 2019, 2020) Statistical Bulletin. International Labour Organisation database, 2020.

Sources and types of data

This paper sourced secondary data from the publications of the World Bank Development Indicators (World Bank, 2020) and Central Bank of Nigeria (CBN, 2020) Statistical Bulletins, National Bureau of statistics of Nigeria (National Bureau of Statistics, 2021) and International labour organisation, (ILO, 2020).

Model Specification

The model specified thus in line with Okun's model (Okun, 1965) for economic growth and unemployment relationship. It follows Babalola, Saka and Adenuga, (2013) model specification with modification as presented in equations 3.1, 3.2, 3.3 and 3.4.

Meanwhile, Okun (1962) states the equation as: $\Delta Y = k - c \Delta U$ (1)

Where Y = real GDP and K = constant, c = other factors, U= unemployment rate, Δ = rate of change.

Functional form of the model as:

$$RGDP = f(\text{UNR}, \text{FGCX}, \text{INF}, \text{LPR}) \dots \dots \dots (2)$$

The mathematical form of function (3.1) can be written as:

$$RGDP = \beta_0 + \beta_1 \text{UNR} + \beta_2 \text{FGCX} + \beta_3 \text{INF} + \beta_4 \text{LPR} \dots \dots \dots (3)$$

The empirical form of the equation (3.1) above is given as:

$$RGDP = \beta_0 + \beta_1 \text{Ln UNR} + \beta_2 \text{Ln FGCX} + \beta_3 \text{Ln INF} + \beta_4 \text{Ln LPR} + \mu_t \dots \dots \dots (4)$$

Where:

RGDP = Real GDP (% of Real GDP)

UNR = Unemployment Rate in Nigeria

FGCX = Federal Government Capital expenditure % to GDP

INF = Inflation rate

LPR = Labour participation rate

Moreover, β_0 is the intercept of the equation, β_1 - β_4 are the coefficients of the explanatory variables to be estimated, μ_t is the stochastic term or disturbance errors term.

In addition, the fundamental reason for using natural log (Ln) is to minimize the problem of multicollinearity in the analysis and for uniformity of unit of measurement in this study.

The *a priori* expectations of the variables included in the model would be specified thus: $\beta_1 < 0$, $\beta_2 < 0$, $\beta_3 > 0$, $\beta_4 < 0$ and $\beta_5 < 0$.

Method of Data Analysis

This study has applied five simple techniques to carry out its empirical analysis. It will begin with descriptive statistics to ascertain the behaviour of the variables included in the model. Then, unit root test for stationarity verification using Augmented Dickey-fuller (ADF).

Subsequently, the cointegration test using Autoregressive Distributed Lag (ARDL) Bound test for long-run equilibrium check among the variables included in the model will be applied. Moreover, (ARDL) model will be used to examine the output growth on unemployment rate in Nigeria from 1986 to 2020.

This model would be used depending on the behaviour of the variables and stationarity level that will inform the selection of ARDL Model which was introduced by Pesaran *et al.* (2001) in order to incorporate I (0) and I (1) variables in its analysis. Apart from that, ECM will be carried out to test the relationship between output growth and unemployment rate for the study.

Conclusively, Granger causality test will be applied to examine the relationship between output growth and unemployment in Nigeria. This test will be necessary to verify whether there is uni-direction or bi-direction relationship between the variables used.

Measurement of Variables

Unemployment rate is measured as a percentage by dividing the number of unemployed individuals by all individuals currently in the labour force. It is expected to have a negative sign with output growth in the analysis.

The Real gross domestic product was used as output growth in this study. This variable is measured in Naira according to the CBN statistical bulletin measurement but its rate of economic growth has been used in this study.

Government Capital expenditure is measured by the total amount of money spent on infrastructure in Nigeria. It is public expenditure on education, agriculture, health, security and other public goods and services in Nigeria. Inflation was measured by rise in price of goods and services in the economy.

RESULTS

Table 1: Descriptive Statistics

Variable	RGDP	UNR	FGCX	INF	LPR
Mean	4.549869	11.50571	3.114338	19.77156	58.81517
Median	4.279277	10.00000	2.554732	12.14382	59.95600
Maximum	21.34747	33.30000	9.383714	76.75887	62.36700
Minimum	-4.214544	4.600000	0.644016	0.223606	52.62100

Std. Dev.	4.538943	6.730088	1.981406	18.45665	2.777771
Skewness	1.320840	1.305298	1.133325	1.763096	-1.094321
Kurtosis	6.694825	4.392503	4.150049	4.947448	2.650159
Jarque-Bera	30.08572	12.76665	9.421299	23.66376	7.164127
Probability	0.302000	0.101689	0.408999	0.090007	0.127818
Sum	159.2454	402.7000	109.0018	692.0045	2058.531
Sum Sq. Dev.	700.4682	1539.999	133.4830	11582.04	262.3444
Observations	35	35	35	35	35

Source: Computed by Authors Using E-views Version 10.

Table 2: Unit Root Test Result (ADF)

Variables	ADF Test Statistical Value	Mackinnon Critical Value (5% Level)	Prob.*	Order of Integration	Remark
RGDP	-8.645621	-2.954021	0.0000*	I(1)	Stationary
UNR	-6.473329	-2.954021	0.0000*	I(1)	Stationary
FGCX (%)	-8.824574	-2.954021	0.0000*	I(1)	Stationary
INF	-3.786427	-2.951125	0.0408**	I(0)	Stationary
LPR	-5.197397	-2.951125	0.0102*	1(1)	Stationary

Source: Computed by Authors Using E-views Version 10.

Note: ** and * are denoted at level and at first difference result of ADF in Table 4.2

Table 3: Optimal Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-470.5393	NA	2260892.	28.82056	29.04731	28.89685
1	-393.0087	126.8683*	95601.60*	25.63689*	26.99735*	26.09464*
2	-371.0188	29.31979	128327.3	25.81932	28.31350	26.65854

Source: Computed by Authors Using E-views Version 10. Note * indicates lag order selected by the criterion

Table 4: ARDL Bound test for Long-Run Equilibrium

Test statistic	Values of F-Statistic	K	Signif. %	I(0)	I(1)
Sample size (n) = 33	6.347183	4	10%	2.696	3.898
			5%	3.276	4.63
			1%	4.59	6.328

Source: Computed by Authors Using E-views Version 10.

Table 5: ARDL Long-run Estimates between output growth and unemployment

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UNR	0.192766	0.180005	1.070891	0.2953
FGCX	-0.778252	0.498051	-1.562595	0.1318
INF	-0.067017	0.040553	-1.652605	0.1120
LPR	1.535615	0.419432	3.661180	0.0013

EC = RGDP - (0.1928*UNR -0.7783*FGCX -0.0670*INF + 1.5356*LPR)

Source: Computed by Authors Using E-views Version 10.

Table 6: ARDL short-run estimates between unemployment and output growth rate in Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-76.66338	12.55110	-6.108100	0.0000
D(UNR)	-0.097692	0.129886	-2.752135	0.0096
D(FGCX)	1.445900	0.405268	-3.567764	0.0016
D(LPR)	1.098343	0.698074	1.573390	0.1293
D(LPR(-1))	-2.082839	0.687683	-3.028780	0.0060
CointEq(-1)*	-0.910824	0.149225	-6.103704	0.0000
R-squared	0.661141	Mean dependent var		-0.106701
Adjusted R-squared	0.598390	S.D. dependent var		4.938695
S.E. of regression	3.129787	Akaike info criterion		5.282772
Sum squared resid	264.4803	Schwarz criterion		5.554865
Log likelihood	-81.16575	Hannan-Quinn criter.		5.374323
F-statistic	10.53584	Durbin-Watson stat		1.565404
Prob(F-statistic)	0.000011			

* P-value incompatible with t-Bounds distribution.

Source: Computed by Authors Using E-views Version 10.

Test of hypotheses

In this part of the study, it was devote to test the hypotheses formulated on the impact of unemployment on output growth in Nigeria as stated in chapter one of this work. It is necessary to verify the hypotheses based on the economic theory and empirical review. The hypotheses have been tested one after the other as follows:

Ho: Unemployment has no significant impact on output growth in Nigeria.

From Table 5 and 6, it showed the short-run and long-run estimates that unemployment rate impacted negatively on output growth rate in Nigeria. By the coefficient of UNR, -0.097692 or 9.6 %, if 1% increase in unemployment rate would decreases real GDP by -0.097692 units or 9.6% in the economy. Unemployment was statistically significant in the model based on its t-statistics and probability values of -2.752135 (0.0096). This implies that the null hypothesis has been strongly rejected. It means unemployment has significant impacts on output growth in Nigeria.

Ho: Federal government capital expenditure has no significant effects on output growth in Nigeria

Moreover, Table 5, federal government capital expenditure has contributed positively to output growth in Nigerian economy but it was statistically insignificant at 5% level of significance. This can be seen by its t-statistic and p-values of -1.562595 (0.1318). It means public expenditure on building standard hospitals, roads, factories, railways, dams' construction, irrigations, higher institutions and jobs generations across the country were not commensurable with her total population of 209 million in Nigeria (NPC Projection, 2019). In this regard, the study accepted the null hypothesis which specified that federal government capital expenditure do no has significant effects on output growth in Nigeria in the long-run. However, in the short-run, it was statistically significant in this analysis judged by its t-statistic value of -3.567764 and p-value of 0.0016. The sign of its coefficient was in line with apprior

expectation and it proved that the null hypothesis of FGEX do not have impact on output growth rate in Nigeria was strongly rejected.

H₀: Inflation rate has no significant effects on output growth in Nigeria.

On the part of inflation rate, its co-efficient of 0.067017 means a unit increase in INF would result to 0.067017 units or 6.7% increase in RGDP in the long-run. In addition, its statistics and p-values of -1.652605 (0.1120) proved that inflation rate was insignificant in the model and therefore, the study do not reject the null hypothesis postulated that inflation rate does not impact output growth in Nigerian economy.

DISCUSSION

From the Table 1, it reveals the mean, median, maximum, minimum, standard deviation, kurtosis, skewness, Jarque-Bera statistics and their probability values for each of the variable involved in this analysis. Also, the Table 1 indicates that the average values for Output growth (RGDP), unemployment rate (UNR), Federal Government Expenditure (FGEX), inflation rate and labour participation rate (LPR) were 4.549869, 11.50571, 3.114338, 19.77156 and 58.81517 respectively. Moreover, median for each variable were 4.279277, 10.0000, 2.554732, 12.14382 and 59.95600 in the economy. Similarly, the maximum values of RGDP, unemployment, FGEX, inflation rate and labour participation include 21.34747, 33.30000, 9.383714, 76.75887 and 62.36700. Whereas, the minimum values were also showed as -4.214544, 4.600000, 0.644016, 0.223606 and 52.62100 in the required outputs. Apart, Furthermore, the most essential statistics was the Jarque-Bera and their p-values which were 30.08572 (0.302000), 12.76665 (0.101689), 23.66376 (0.090007) and 7.164127 (0.127818). It also shows that the variables used in this analysis were normally distributed. However, the observations included in the study were 35 observations which were relative small sample size that have been used for policies formulation and recommendations in many economies. The next step was to conduct unit root tests for the study. In this work, Augmented Dickey Fuller (ADF) has been adopted to check the stationarity of time series data used in this study.

In the Table 2, the study started the analysis with robustness checking of unit root test. The unit root test adopted here for this study was ADF test as criteria to ascertain the stationarity of the data involved. While the result of the ADF test indicated that Real GDP was not stationary at level when investigated but it becomes stationary at first difference as shown in the Table 2 in row one (1). Furthermore, unemployment rate (UNR) was stationary at first difference as indicated by its order of integration of one (I (1)) in row two of Table 2.

It can be seen that federal government capital expenditure (FGEX) becomes stationary after first differencing i.e -8.824574 was greater -2.954021 with its p-values of 0.0000 in Table 2. Also, labour participation was stationary at first difference according to its ADF values of -5.197397 which was greater than critical values of -2.951125 and its p-value of 0.0102 proved it to be significant at 5% level of significance.

In that same Table 2, inflation rate was stationary at level look at its ADF value of -3.786427 which was greater than its critical values of -2.951125 as contain in row four (4). Even its p-values 0.0408 indicate that inflation was stationary at levels.

Finally, in the Table 2, the ADF result reveals that there was not any variable which is stationary in second difference that is, integrated of order two ($I_{(2)}$). Since the variables were stationary at level and first differences that is, $I_{(1)}$ and $I_{(0)}$ respectively. It has fulfilled the conditions for the computation of ARDL estimates in econometric theory.

More to that, it was necessary to select the optimal lag length for this study. This was achieved by using standard VAR output to choose the most appropriate lag length for computation of ARDL short and long-run according. To select the most optimal lag length for this study for both dependent and independent variables of work, it used standard VAR. The result is presented in Table 3.

From the Table 3, it revealed that the optimal lag length was lag one (1) based on Akaike information criterion with the minimum value of 25.63689 compared to values of other information criteria. Furthermore, the choice of lag length one (1) was made because of the Akaike Information Criterion has the minimum value of 25.63689. Also it was the best lag length selection for the annual data of this nature. In the Table 3, other criteria for optimum length such as LR (Sequential modified LR test statistic), FPE (Final Prediction Error), SC (Schwarz Information Criterion) and HQ (Hannan-Quinn Information Criterion) were 126.8683*, 95601.60*, 26.99735* and 26.09464* respectively.

This study proceeded and conducted ARDL F-bound test to ascertain the long-run relationships among variables included in this analysis. This was important part of estimating ARDL results.

From the results of the ARDL bounds test approach to cointegration presented in Table 4, it was found that the computed F-statistic of 6.347183 exceeds the upper critical bounds at 1%, 5% and 10% critical values. This confirms the existence of long run relationship between unemployment rate and real output growth in Nigeria within study. However, since, we have small sample, we make use of the critical values provided by Narayan (2005). The critical value for the upper bound in Narayan's Table was 4.013 and for the lower bound 2.804. The f- statistics for this bound test which is 6.347183 which is greater than both 4.013 and 2.804. Therefore, the null hypothesis of no long run relationship is strongly rejected even at the 5% level of significance.

Moreover, this findings of Ademola, and Badiru (2016) and Akejuet *al* (2015) as reviewed in this study established the existence of positive and long run relationship between unemployment and output growth in Nigeria. This result was also corroborated by this study that long-run equilibrium exist among the variables involved in this analysis.

This study presented the long-run estimates among unemployment rate, labour participation rate, inflation rate, Federal government capital expenditure (%) to GDP and output growth rate in Table 5. The output growth and unemployment were the main variables of interest in this study but the other variables were included in the model to serve as control variables in its analysis. It should be noted after establishing the evidences of long-run relationship among the variables in Table 4, the researchers then presented ARDL Long-run estimate in Table 5 form examination a priori expectations among the variables captured in this study.

In the Table 5, the expected sign between output growth and unemployment rate was in line with Okun's law of inverse relationship between unemployment and economic growth in Nigerian economy (Okun, 1962). It also appeared to be true about the positive relationship between real GDP and Federal government capital expenditure in this analysis. However, it was contrary signs among output growth, inflation rate, and labour participation rate in the country.

Meanwhile, the coefficient of Unemployment rate of 0.192766, by this study contributed negatively to real GDP which were in line with economic theory of Okun's law (Okun, 1962). It implied that, unemployment impacted negatively on output growth rate in long-run. It means that the higher is the UNR and the lower is output growth rate assumes all things being equal and vice versa. By this coefficient of 0.192766; it means 1 percentage (%) increase in unemployment would bring about 19.3 percentage (%) decrease in output growth rate in Nigerian economy.

Also, the t-statistic and its p-values of 1.070891 (0.2953) indicated that the unemployment was insignificant at 5% level of significance in the model. It shows that unemployment rate was important factor influence real GDP in Nigeria. Therefore, this study does not reject the null hypothesis which stated that unemployment does not has significant impact on real GDP in this country.

Moreover, federal government capital expenditure has contributed positively to output growth in Nigerian economy but it was statistically insignificant at 5% level of significance. This can be seen by its t-statistic and p-values of -1.562595 (0.1318). It means public expenditure on building standard hospitals, roads, factories, railways, dams' construction, irrigations, higher institutions provision, across the country were not commensurable with her total population of 209 million in Nigeria (NPC Projection, 2019). In this regard, the study accepted the null hypothesis which specified that federal government expenditure do no has significant impact on output growth rate in Nigeria. It revealed by the coefficient of 0.778252 shows that 1 % increase in Federal government expenditure can impact output growth rate 0.778252 units or 77% in the country.

Furthermore, inflation rate coefficient appeared contrary to economic theory that there was negative relationship between inflation rate and RGDP in Nigeria. The result showed that inflation rate impacted RGDP in Nigeria positively. In fact, it's co-efficient of 0.067017 means a unit increase in INF would resulted to 0.067017 units or 6.7% increase in RGDP in the long-run. In addition, it statistics and p-values of -1.652605 (0.1120) proved that inflation rate was insignificant in the model and therefore, the study do not reject the null hypothesis postulated that inflation rate does not impact output growth in Nigerian economy.

Finally, labour participation rate impacted output growth rate negatively which was contrary to economic theory of positive relationship. This means if 1% increase in labour participation rate (LPR) would result to -1.535615 units or 15.4 % decrease in output growth rate in the Nigerian economy. It may be a true nature of Nigerian economy where marginal product of labour always approaching zero. By this study, the coefficient negates the law of economics that positive relationship would exist between labour participation rate and RGDP in the economy. By this negative outcome of its coefficient of -1.535615, it means when 1 unit

increase in LPR would decrease by -1.535615 units or 15.4% instead of increase. It was significant in the model by its statistic and P-values of 3.661180 (0.0013). Therefore, this study strongly reject the null hypothesis that labour participation rate do not impact output growth rate in Nigeria.

Moreover, the implication of this result is that labour participation rate contributed significant impacts on the real gross domestic product (RGDP) in Nigeria. This result supported the works of Nwankwo and Ifejiolor (2014) studied the causes of unemployment in Nigeria and how it has impeded the economic development. They applied descriptive analysis on population of unemployed youth selected from the three Local Government Council (Oyi, Idemili North and South) which its figure is estimated to be about 2.3 million youth (NPC, 2006), 30 youths were drawn from each of the Local Government Council. Convenience sampling technique and Pearson correlation on primary and secondary data. Also, Ademola, and Badiru (2016) investigated and determined the effects of unemployment and inflation on economic performance in Nigeria within the specified period and to establish the relationship between unemployment and inflation with Real Gross Domestic Product in Nigeria. The study applied Ordinary Least Square (OLS) technique and various diagnostic test to determine how fit are the data for the analysis. The result of Diagnostic test indicates that data for the analysis are stationary at level and there are 2 cointegrating equation implying that there exist long-run relationship between RGDP, Unemployment and inflation agreed with this outcomes.

Apart from that, this study presented the ARDL short-run estimate in Table 6 to verify the present impacts of unemployment rate, federal government capital expenditure, inflation rate and labour participation rate on national output growth rate in Nigeria. This short-run dynamism result would help the study to examine the current impact of unemployment rate on national output growth rate in Nigeria.

In the Table 6, it addressed the broad objective of this study which is to examine the impact of unemployment on national output growth in Nigerian economy. Hence, the results of ECM as contained in Table 6, it showed the coefficient of Error Correction Mechanism (ECM) and its speed of adjustment to the long run equilibrium. The negative value of the coefficient of ECM implies that there is a long run relationship among unemployment rate, federal government capital expenditure, inflation and labour participation rate in Nigeria. By the ECM coefficient of -0.910824 which was in agreement with economic theory that a negative sign exist and it will be statistically significant by its probability value of 0.0000. The economic implication of this was that ECM value of (-0.910824) or 91 % shows the shocks or divergence among the variables would be converged back in one (1) year an1 month ensured long-run equilibrium in the model built.

Furthermore, the result in Table 6 indicated that the coefficients of unemployment (UNR) as -0.097692 units, it implies that UNR influences real GDP negatively in Nigerian economy. This negative relationship between unemployment and output growth rate was in line with Okun's law (Okun, 1962). It shows both in the short-run and long-run estimates, unemployment rate impacted negatively on output growth rate in Nigeria. By the coefficient of UNR, -0.097692 or 9.6 %, if 1% increase in unemployment rate would decreases real GDP

by -0.097692 units or 9.6% in the economy. Unemployment was statistically significant in the model based on its t-statistics and probability values of -2.752135 (0.0096).

In the same vein, federal government capital expenditure rate (FGCX) has impacted national output growth rate positively based on its coefficient of 1.445900; that is, 1 unit increase in FGCX would enhance RGDP by 1.445900 or 144% growth within the short-run of this analysis. It was statistically significant in this analysis judged by t-statistic value of -3.567764 and its p-value of 0.0016. The sign of its coefficient was in line with apriori expectation and it proved that the null hypothesis of FGCX do not have impact on output growth rate in Nigeria was strongly rejected.

In addition, labour participation rate coefficients of 1.098343 units in the current year proved that 1 unit increase in LPR would result to 1.098343 units or 10.9% increase in output growth in Nigeria assuming all things being equal and vice versa in the short-run analysis. It was insignificant in the model based on its t-statistic and p-values of 1.573390 (0.1293). However, its previous value of -2.082839 units was not in line with economic theory but it was significant in the model as seen by its t-statistics and P-values of -3.028780(0.0060).

Besides that, the result on Table 6, it reveals the R- Square (R^2) of (0.661141or 66%) proved that the variables captured in the model impacted output growth rate in Nigeria. It has about 66% influences on Nigerian economy leaving only 34% of the impact on other variables not included in the model. This means that the model was well specified and good fit to examine the impact of unemployment on output growth rate in Nigeria. Similarly, the adjusted R-squared (R^{-2}) of 0.598390or 60% also supported the good fit of the model to address the main objective of this study which was to examine the impact of unemployment rate on output growth in Nigerian economy.

From Table 6, by the F-statistic value of 10.53584 and p-value of 0.000011, it showed that all the variables (UNR, FGCX, INF and LPR) were jointly influence output growth rate in the short-run. It was statistically significant in short-run. Finally, the outcome in Table 6 indicated that Durbin-Watson statistic of 1.565404 means no presence of autocorrelation in the result and hence the model is non-spurious. Then, this model can be used for policy recommendation on how to improve RGDP through reduction in the impact of unemployment in the country. However, in the next step, this study would provide pairwise granger causality tests in order to check the relationship among the variables in the model. This study may help to investigate whether uni-directional or bidirectional relationship exist between the unemployment and output growth rate in Nigeria.

SUMMARY

This paper examined the impact of unemployment on output growth in Nigeria. The results of descriptive statistics proved that the variables were normally distributed based on the Jarque-Bera statistic and its probability. Also, the findings from Augmented Dickey Fuller test (Unit root test) indicate that all the variables were not stationary at level with the exception of inflation rate which were stationary at level. The optimal lag length was lag one (1) used in this study. Moreover, ARDL bound tests indicated that a strong evidence of cointegration among the variables exist. Furthermore, the result indicates that federal government capital expenditure, inflation rate, and real gross domestic product (GDP), positively in Nigeria

within the period of this study except unemployment rate and labour participation rate in long run.

More to that, the ECM coefficient of -0.910824 which was in agreement with economic theory that a negative sign exists and is statistically significant by its probability value of 0.0000. The economic implication of this was that ECM value of (-0.910824) or 91 % shows the shocks or divergence among the variables would be converged back in one (1) year and 1 month ensured long-run equilibrium in the model built. Furthermore, the result in Table 6 indicated that the coefficients of unemployment (UNR) as -0.097692 units, it implies that UNR influences real GDP negatively in Nigerian economy. This negative relationship between unemployment and output growth rate was in line with Okun's law (Okun, 1962). It shows both in the short-run and long-run estimates, unemployment rate impacted negatively on output growth rate in Nigeria.

On the other hand, the result of Pairwise Granger causality test indicates that there is unidirectional among variables studied in the model. Diagnostic tests reveal that there were not presence of serial correlation and constant variance. The model was well specified and stable for policy recommendations on the impact of unemployment and output growth in Nigeria.

CONCLUSION

In this study, it is concluded that unemployment rate impacts negatively on output growth in the Nigerian economy and it was statistically significant in both short and long-run. Also, federal government capital expenditure % to GDP exert positive impact on real GDP, inflation and labour participation rate influence output growth positively in this study. The results of this study also reveal that there was a long-run relationship among the variables studied. Consequently, this long-run relationship exists among unemployment rate, federal government capital expenditure, inflation, labour participation rate and output growth rate

RECOMMENDATIONS

This study made the following recommendations:

- i. The major policy implication of this study is that concerted effort should be made by government to increase output growth or real GDP through diversification of the economy in Nigeria.
- ii. Government should increase her budgetary allocation to fixed capital expenditure on the real sector of the economy.
- iii. Proactive approach should be adopted to minimise the negative impacts of inflation on output growth in Nigeria.
- iv. Entrepreneurial policies and development should be included in all curriculums of schools in Nigeria to reduce the high rate of unemployment in this country.
- v. Government should engage in policies of equitable distribution of income and provision of good jobs for her citizens.

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