Analyzing the Effect of Unemployment and Growth Nexus in Nigeria

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Abstract: This study analyzed the effect of unemployment nexus on economic growth in Nigeria. The study used time series data from 1981-2017. UH Real Gross Domestic Product (GDP) is a proxy for growth with inflation and savings deposits as independent variables. The researcher used an error correction model (ECM) estimation technique in analyzing data that were sourced from the National Bureau of Statistics and Central Bank of Nigeria statistical bulletin. Stationarity tests, cointegration tests, and error correction mechanisms were carried out to avoid possible spurious regression. The researcher found an inverse and insignificant relationship between Unemployment and Real Gross Domestic Product (RGDP). Furthermore, a positive and insignificant relationship was established between Savings Deposits and RGDP. Inflation has a negative but insignificant relationship with RGDP. The study recommended that government should profile the unemployed youths into skilled and unskilled labour and target its poverty reduction job policies towards reducing the employment rate for economic prosperity.

Keywords: Unemployment, economic growth, and error correction model (ECM).

1. Introduction

One of the greatest challenges of the African countries today is the high rate of unemployment that has maintained a rising trend over the years. International Labour Organization (ILO) 2017 report stated that as global workforce increases, in the short term unemployment is expected to rise modestly. All continents and economies, whether developed, developing, or underdeveloped, have a share of the global unemployment.

International Monetary Fund (IMF), annual report, 2017 stated that in Europe, with Spain in focus, unemployment remains very high at about 18 percent, and youth unemployment is even higher, at 42 percent, almost double the euro area average: Therefore, the economic problem of unemployment is not limited to Nigeria and Africa alone, but also to the whole economies of the world. From 6.4 percent in 2014, unemployment rose to 10.4 percent in 2015 and as at 1st quarter...
2016 it increased to 13.9 percent while the proportion of youth unemployment remains the largest in these percentages (Ministry of Budget and National Planning, 2017).

Economic growth is the increase in the inflation-adjusted market value of goods and services produced by an economy over time is measured as the percentage rate of increase in real gross domestic product (RGDP)', Aurangzeb and Khola (2013), posits that economic growth is a vital factor that affect unemployment and vice versa. Although the Nigerian economy has been growing moderately at an average of 6% in recent years, it has been argued that the growth has not been impactful and inclusive as expected especially in employment generation. The reason for this is not farfetched as die economy is dominated by the oil and gas sector which accounts for less than 5 percent of total employment (Enebeli, as cited in Zenith Economic Quarterly, 2015).

National Bureau of Statistics (NBS) Labour Force 2018 report states that the total population in Nigeria is divided into currently active and not currently active. The currently active otherwise called labour force population covers all persons aged 15 to 64 years who are willing and able to work regardless of whether, they have a job or not. The definition of unemployment therefore covers persons (aged 15 to 64), who during the reference period were available for work, actively seeking work but were without work. The not currently active otherwise called non-labour force includes population below 15 or older than 64, as well as 'those within the economically active population i.e. 15-64, who are unable to work, not actively seeking for work or choose not to work and or are not available for work'.

Soylu, Cakmak and Okur (2018), states that unemployment is the presence of a workforce in and out of the working force who is willing to work from the current wage and cannot find a job. In some parts of the world including the Middle East where unemployment and poverty is rampant and played a key role in the uprising, it is reasonable to conclude that unemployment situation in Nigeria poses a threat to its development, security and peaceful co-existence. The reason for this would be that the country is made up of different cultural and religious backgrounds with differences in political, cultural and religious understanding and accommodation emanating from concerns of abuse of power, resource allocation, nepotism, negligence and corruption among others.

Nigeria has been classified as the largest African country and therefore, the giant of Africa. According to Okonjo-Iweala (2018), Nigeria recorded an estimated gross domestic product (GDP) of $400 billion in 2017 while South Africa, the continent's next largest economy has a GDP of $317 billion. Nigeria constitutes 71 percent of West Africa's GDP and 27 percent of the Africa continent's GDP.

The country is rich in both human and material resources. Despite this, it has one of the largest populations of unemployed people. The level and resultant effect of unemployment in Nigeria is suggesting future negative repercussions with predictions of crime, high level of poverty, migration, low domestic industrial output, riot, gunmen attacks, youth restiveness, kidnapping, banditry, conflict and lawlessness if not subjected to very immediate control (Imoisi, Amba and Okon, 2017).

Increasing high rate of unemployment, unimpressive growth rates and poverty among other miseries of the populace are the order of the day. In spite of its importance, the implementation of policies on employment creation in many developing nations including Nigeria has not yield much impact as there still exists wide gap between jobs demand and supply.
2.1 Conceptual Review

2.1.1 Unemployment

The classical theory of employment believes in the realization of full employment without inflation, a closed laissez fair capital economy without foreign trade, perfect competition in labour and product market, homogeneous labour, division of output between consumption and investment, flexibility of wages and prices, proportional relationship of real and money wages, given capital and technological knowledge in the short run (Jhingan, 2003). Their view is characterized by consumer sovereignty, individual ability and profit maximization, perfect competition, economic efficiency and by very many producers (with so tiny a market share not large enough to influence price or wages) and consumers.

In reality wages are highly inflexible in the downward direction and are a function of the workings of institutional forces including trade union pressure such as Nigeria Labour Congress (NLC), legislated salary scales and Multinational Corporation hiring practices. In developing countries there are more people in search of employment at the going wage rate than the openings available. The NLC does not only negotiate the welfare of its members in terms of wages increase, but also follow up on the channel in which the savings made from subsides are re-invested (Okonjo-Iweala, 2018).

The Keynesians explained the determination of national output and employment in terms of the level of aggregate demand in relation to and economy's potential output i.e. what it could produce were resources fully and efficiently utilized, given the prevailing technology (Keynes, 1936). The thrust of the Keynesian theory and its unique difference from the classical standpoint was the contention that nothing inherent in a market economy would guarantee that the actual level of national income would be exactly equal to potential full employment; everything depends on the level of aggregate demand. Keynes advocated for unemployment eradication; increase m total demand through direct increases in government expenditure or by government policies that indirectly encourage more private investment (low interest on business loan, tax allowance and holidays, investment subsidies). The Keynesian theory is limited in its applicability to the Nigerian economic situation. How? It is based on the institutional and structural assumption of a well-functioning product, factor, money market that characterized the developed countries economy (Jhingan, 2003).

2.1.2 Economic Growth

The neo-classical model was an extension to the 1946 Harrod-Domar model that included a new term: productivity growth. Fafchamps (2000), opines that a much more serious explanation for long-term growth is the accumulation of machinery and equipment often called physical capital. It has long been recognized that the accumulation of capital is a key feature of the industrialization process, and that it is necessary for growth to take place.

As the number of pieces of machinery and equipment per worker increases, workers' productivity goes up so that output per worker and thus consumption per head increases. This simple common sense observation forms the basis of what is called neo-classical growth theory.

The concept of capital in the Solow growth model is broadened from physical capital to human capital which includes factors such as education, experience and health. The emergence of the sustainable human development paradigm clearly demonstrates the major demands for human development in Nigeria. They are identified as education, employment, health, basic social
services, including access to safe water and sanitation, gender equalities, good governance and human right (Aigbedion and Anyanwu, 2015). This model came up with extensions to the Harrod-Domar model by including labour as a factor of production and also the capital to labour ratio is not fixed.

2.1.3 Causes of Unemployment in Nigeria

According to Adil (2011), some economic theories made explanations for, while others argue against the problem of unemployment. Some posits that the unemployed workers are to blame for unemployment. While some too maintained that the economic system is to blame. Some economic theories posit that the problem of unemployment is as a result of external sources and shocks, or unpredictable events; others argue that invasion of technological advancement and labor market institutions are the causes of the unemployment problem. Other economic thought linked and narrowed it to lack of creativity, innovation and low spending of government and corporations. Keynes (as cited in Jhingan, 2003), posits that unemployment is a consequence of deficient demand and to overcome it, he proposes stepping up consumption and non-consumption expenditures.

However, in this modern age, as it has been observed recently, that leadership problem, lack of savings and investment culture, lack of infrastructural facilities, poor educational policies, wrong attitude to work and according to Okonjo-Iweala (2018), corruption especially in the form of petroleum subsidy are also part of the causes of unemployment in Nigeria.

2.2 Empirical Literature and Theoretical Framework

2.2.1 Empirical Review

Soylu, Cakmak & Okur (2018), examines the relation between economic growth and unemployment in Eastern European, Countries for the period of 1992-2014 within panel data framework. Panel Unit Root, Pooled Panel OLS and Panel Johansen Co-integration tests are applied respectively. The results show that the economic growth and unemployment series are stationary at first difference; unemployment is affected positively by economic growth. In other words, a negative relationship was established between unemployment and economic growth.

Akutson, Messiah and Araf (2018), examined the relationship between unemployment and economic growth in Nigeria covering the period 1986 to 2015. The analysis was done using the Auto Autoregressive Distributed Lag (ARDL) Bound Test, the Parsimonious Error Correction Model (ECM) of the ARDL Model to test the relationship and analyzed the effect respectively. The findings showed that there is no long-run relationship between unemployment rate and Economic growth in Nigeria; although, with effective policies, the long-run increase in unemployment has a growth enhancing mechanism on economic growth which is statistically significant. The study revealed that in the short-run, unemployment significantly and positively affects economic growth in Nigeria for the period under study.

Imoisi et al. (2017), investigates the impact of unemployment on economic growth in Nigeria using the OLS multiple regression analytical method in analyzing annual time series secondary data from 1980 to 2016. The study established that unemployment, population and labour force have significant impact on Nigeria's economic growth, while minimum wage does not have a significant impact on the country's economic growth.
Popoola & Ajayi (2016), examines the impact of National Directorate of Employment (NDE) in Oyo State engaging the use of descriptive and inferential statistics with chi-square in particular and concludes that the intervention of the NDE has affected employment positively. As employment is positively affected, it means unemployment reduces and there is growth in the area examined.

Jajere (2016), examined 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 make use of Ordinary Least Square (OLS) regression technique, data shows that unemployment is negatively related to economic growth and the result of the analysis 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.

Kareem (2015), studies the impact of employment level on the economic growth in Nigeria. The study make us of regression analysis and causality tests to achieve the specified aims. Augmented dickey fuller (ADF) test was used to test the stationarity of macroeconomic variables. The study discovered that there exists significant relationship between the employment level and Economic growth (proxy by real GDP) during the period of 1985 to 2012. Correspondingly, the study concluded that there is uni-directional relationship between employment and economic growth.

Adamu, Bashir and Babayo (2015), analyzed the impact and the directional causality between unemployment and economic growth using Nigeria as a case study; with the scope covering from 1982 to 2014. Secondary data were sourced from Statistical Bulletin of the Central Bank. An experimental research design was conducted using OLS, Phillips-Perron unit root test and Pair-wise Granger causality test. Using OLS, the outcome of the analysis confirmed Okun's law as it revealed a negative relationship between unemployment and real gross domestic product proxy for economic growth.

Aurangzeb and Khola (2013), carried out investigation of macroeconomic causes of the unemployment for three different countries which are India, China and Pakistan for the period of 1980 to 2009. The investigation engaged the use of co-integration, granger causality and regression analysis. The variables designated for the investigation are unemployment, inflation, gross domestic product, exchange rate and the rate of population increase.

2.2.2 Theoretical Framework

This study will be anchored on Solow's growth model to explain the relationship between the real gross domestic product (RGDP) and unemployment, inflation and savings. The Solow-growth model was published in 1956 as a seminar paper on economic growth and development under the title, "A contribution to the theory of economic growth". The model is an exogenous growth model, an economic model of long-run economic growth set within the framework of neoclassical economics. It attempts to explain long-run economic growth by looking at capital accumulation, labor or population growth, and increases in productivity, commonly referred to as technological progress.

According to the traditional neoclassical growth theory, output growth results from one or more of three factors: increase in quantity and quality (through population growth and education) increase in capital (through savings and investment) and improvement in technological advancement (Agénor, 2004).
Solow builds his model around the following assumptions: One composite commodity i: produced, allowance is made for depreciation of capital before arriving at net output, there are constant returns to scale, labour and capital are rewarded based on their marginal efficiency, flexible wages and prices, there is perpetual full employment of labour, there is also full employment of the available stock of capital, labour and capital are substitutable for each other, there is neutral technical progress, the saving ratio is constant.

The Solow growth model is developed based on a Cobb-Douglas production function given by

\[ Y = f(K, L) = K^\alpha L^{1-\alpha} \]

Where the form:
Y = output
K = Capital input
L = Labor input
\(\alpha\) and \(\gamma\) are output elasticities of capital and labor respectively and \(\tau\) is a number between 0and1

The other important equation from the Solow growth model is the capital accumulation equation expressed in the form:

\[ K = -dK \]

Where:
K = change in capital stock
\(sY\) = gross investment
dK = depreciation during the production process

With mathematical manipulation Solow derives the capital accumulation equation in terms of per worker i.e. \(k = sY - (n+d)k\). This implies that the change in capital per worker is a function of investment per worker, depreciation per worker and population growth. Of these three variables only investment per worker is positively related with change in capital per worker.

### 3 Methodology and Analysis

#### 3.1 Nature and Sources of Data

The data used in this dissertation work is purely of secondary in nature. The source include the National Bureau of Statistics (NBS), the Central Bank of Nigeria’s (CBN) statistical bulletin, international annual reports such as Global Competitiveness Report (GCR) and International Monetary Fund (IMF) Annual Report, The data collected include those on gross domestic product (GDP), unemployment level, inflation and savings for the period 1981-2017. Model Specification

In line with the objectives of this study, literature reviewed and the variables suitable for this work? Imoisi et al. (2017) model is therefore modified using GDP growth rate (GDP R) as dependent variable with unemployment (UNEM), Inflation rate (INFR) and Savings Deposit (SAVD) as independent variables, The equation is therefore expressed as:

\[ \text{GDPRI} = a + (h\text{SAVD} + b3\text{INFR}t + 1 - h) \]

Introducing the model parameters and error term, the model becomes:

\[ \text{GDPRI} = a + (h\text{SAVD} + b3\text{INFR}t + 1 - h) \]

Taking the natural log of equation 2, the equation then becomes:
Log GDP$_t$ = $\alpha + \beta_1 \text{LogUNEM}_t + \beta_2 \text{LogSAVD}_t + \beta_3 \text{LogINFR}_t + U_t$  \hspace{1cm} (3)

$\beta_1, \beta_2 < 0; \beta_3 > 0$

Where:

GDP = Gross Domestic Product Growth Rate
UNEM = Unemployment Level
INFR = Inflation Rate
SAVD = Savings Deposit

$\alpha, \beta_1, \beta_2, \beta_3$ are the parameters to be estimated and $U_t$ = Error term.

**Error Correction Model**

The Error Correction Model (ECM) was first used by Sargan and later popularized by Engle and Granger for the correction of disequilibrium. So, the ECM is a mechanism developed by Engle and Granger as a means of reconciling the short-run behaviour of an economic variable with its long- behaviour. This study used the ECM estimation and restated the model as;

$$\text{ARGDP}_t = \beta_1 \text{AUNEM}_t + \beta_2 \text{ASAVD}_t + \beta_3 \text{AINFL}_t + \text{ECM}_t$$

Where $A$ indicates the first difference of variables. ECM stands for the error correction term (the residual series created from the cointegrating equation); and $t$ is a time subscript.

### 4.1 Presentation of Unit Root Results

The Augmented Dickey Fuller (ADF) unit root test was employed to test for stationarity of all the Macroeconomic variables employed for the study, The results are presented on the tables below:

**Table 4.1: Unit Root Test Result using Augmented Dickey Fuller (ADF)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>P-value @ level</th>
<th>t-statistic @ first difference (5%)</th>
<th>P-value</th>
<th>Critical value Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGDP</td>
<td>1.0000</td>
<td>-6.801</td>
<td>0.0000</td>
<td>-2.978</td>
</tr>
<tr>
<td>UNEM</td>
<td>0.9970</td>
<td>-6.270</td>
<td>0.0000</td>
<td>-2.975</td>
</tr>
<tr>
<td>SAVD</td>
<td>0.8279</td>
<td>-8.553</td>
<td>0.0000</td>
<td>-2.975</td>
</tr>
<tr>
<td>INFL</td>
<td>0.1480</td>
<td>-5.768</td>
<td>0.0000</td>
<td>-2.975</td>
</tr>
</tbody>
</table>

*Source: Extract from computer on regression of data using Stata version 13, (2021).*

The decision rule here is that when the t-statistics is greater than the critical value at 5% significance level and the probability value (P-Value) is less than 0.05, it shows that the variable is stationary at level otherwise the difference is taken until it becomes stationary.

The results show that all the variables tested were not stationary at level and were stationary only at first difference. The t-statistic values of all the variables are all less than the critical values at the standard 5% significant level and their probability values are greater than 0.05 at level. The fact that the variables were not all stationary at level however connotes the existence of unit root and indication for co-integration.
Therefore, in order to avoid the misinterpretation bias that comes with analyzing co-integrated variables using the Ordinary least square estimation technique, the study further tested for cointegration,

### 4.2 Cointegration Tests

Engle-Granger estimation technique is employed to test for co-integration which entails predicting the residual of the model and testing for unit root. Again, the residuals of the regression for the model are tested using the Augmented Dickey Fuller and the results are shown below:

#### Engle-Granger (RGDP) Model

**Table 4.2: Result of ADF Unit Root Test on the residual of the Model**

<table>
<thead>
<tr>
<th>Variable</th>
<th>t-statistic</th>
<th>P-value</th>
<th>Critical value</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual of RGDP Model</td>
<td>0.059</td>
<td>0.9631</td>
<td>5% = -2.972</td>
<td>Not Stationary</td>
</tr>
</tbody>
</table>

*Source: Extract from computer on regression of data using Stata version 13, (2021).*

The decision rule in using Engle-Granger estimation technique is that when the result of unit root test of the residual for the model is not stationary, it indicates absence of cointegration.

The results of the unit root of the residual shows that it was not stationary at level, This implies that there exist no cointegration and hence no need for the Fully Modified Ordinary least square (FMOLS) estimation technique, since the OLS estimation technique will not be biased in estimations, We proceeded to error correction using the Engel and Granger two-step Error Correction Model, The result is presented below;

#### Error Correction Model (ECM) using Engle and Granger 2-Step Estimation

**Table 4.3: Engle-Granger 2nd -Step Regression Result for DRGDP Model**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>T-statistics</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.0373052</td>
<td>2.04</td>
<td>0.052</td>
</tr>
<tr>
<td>DLUNEM (-1)</td>
<td>-0.161517</td>
<td>-0.60</td>
<td>0.151</td>
</tr>
<tr>
<td>DLUNEM</td>
<td>0.13973</td>
<td>0.54</td>
<td>0.297</td>
</tr>
<tr>
<td>DLSAVD</td>
<td>-0.210896</td>
<td>-0.85</td>
<td>0.303</td>
</tr>
<tr>
<td>LSAVD (-2)</td>
<td>0.0058149</td>
<td>0.37</td>
<td>0.175</td>
</tr>
<tr>
<td>DLINFL</td>
<td>-0.0069166</td>
<td>0.86</td>
<td>0.318</td>
</tr>
<tr>
<td>DLINFL</td>
<td>0.0160168</td>
<td>-0.74</td>
<td>0.397</td>
</tr>
<tr>
<td>Acme (-1)</td>
<td>-0.1484952</td>
<td>177</td>
<td>0.0046</td>
</tr>
</tbody>
</table>

*R2 0.95 | Adjusted 0.94 | F-Statistic = 202.56, Prob F=0.0000 | Dw = 1.31 Breusch-Pagan P-value=0.0019

*Source: Computation by Researcher using Stata 13, (2021).*

The result in table 4.4.1 shows that the explanatory power of the model is 95% as shown by the IR2 value, Though the significance of the entire model is also confirmed by the f-statistics value of 202.56, the absence of serial autocorrelation or heteroscedasticity was also confirmed from the result of Durbin Watson.
4.3 Discussion of Findings

The error correction term ((ECM (-1)] of the model, as shown in Table 4.42 coefficient (i.e. -0.1484952) has the expected negative sign and insignificant as the absolute value of the probability statistics (i.e.0.046) is lesser than 0.05. This implies that the short run disequilibrium is corrected and adjusted to the long run equilibrium at 14.8% speed. The result shows that RGDP has negative linear relationship with UNEM and INFL. An increase in UNEM and INFL by one unit will lead to a decrease on the average in RGDP by 0.161517 and 0.0069166 units respectively at lag one. Furthermore, there exist a positive relationship between RCIDP and SAVD. An increase in SAVD by one unit will lead to decrease on the average in RGDP by unit at lag two.

This result is important on the effect of Unemployment on real growth; hence on the level of economic growth in Nigeria. An increase in inflation level has decreasing impact on real growth, the lower the inflation rate, the higher the economic growth rate.

5.1 Conclusions

Unemployment constitutes a major macroeconomic problem in Nigeria. Economic policy of successive government both in Nigeria and beyond has been to tackle the unemployment. The efforts by successive governments to tackle unemployment have totally successful due to policy discontinuity, policy reversal and erroneous reducing policy, Corruption has also negatively affected the potency of the various job policies of successive governments. The result indicates that the high level of hindered the level of economic growth in Nigeria. This is not surprising given the flawed policies of various governments.
5.2 Policy Recommendations

The following recommendations are therefore made for policy purpose:

i. Government should channel its unemployment reduction scheme such as N-Power, Federal Teachers Scheme (FTS), Anchor borrower and other poverty eradication policies toward a profiled unskilled and skilled youths for an impactful economic growth

ii. Borrowings should be tied to real sector projects such as road construction, power generation and even distribution across the 36 states of the federation, federal capital territory (FCT) and the 774 local government areas (LGA). This will give multiplier effect of creating more jobs for the ever increasing population.

iii. Government should ensure reasonably low borrowing interest rate which will increase business activities and lead to productivity. The higher the productivity, the higher the business profits and labour wages which in turn increase marginal propensity to save (MPS). Government policy should aim at reducing inflation to one-digit in the shortest time frame.

iv. This can be achieved via promotion and investment on locally made goods and services over imported ones which will help to eradicate the challenge of imported inflation.

v. Government should ensure seamless synergy among its policy formulation agencies in terms of the monetary, fiscal and direct approach harmonization for economic stability.

REFERENCES


17. Palgrave Macmillan.