Unemployment and Economic Growth in Nigeria

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Abstract

The rate of unemployment has risen in the last decade in most of the sub-Saharan African countries. The situation in Nigeria is rapid population growth with low level of employment rate. The theoretical proposition of the Okun's law is that a negative relationship exists between unemployment rate and economic growth. This study intends to test the validity of Okun's law in Nigeria. In order to examine the relationship between unemployment rate and economic growth, Error Correction Model (ECM) and Johasen cointegration test were employed to determine both the short run and long run relationships among the variables employed in the study. Empirical findings show that there is both the short and the long run relationship between unemployment rate and output growth in Nigeria. Hence, there is need to incorporate fiscal measures and increase the attraction of foreign direct investment (FDI) to reduce the high rate of unemployment in the country.

Keywords: Unemployment, economic growth, Okun's law, cointegration, error correction model.

JEL Classification: B22, E24, F43, J64

1.   Introduction

One of the greatest challenges of the Sub - Saharan African economies today is the high rate of unemployment that has maintained a rising trend over the years. The problem of unemployment has been of great concern to the economists and policy makers in Nigeria since early 1980s. The effect of financial crisis on public and private sectors has led to renew attention on the phenomenon. It is a widely accepted view in economics that the growth rate of the Gross Domestic Product (GDP) of an economy increases employment and reduces unemployment. The three most significant elements for the economy overall are productivity, income distribution and unemployment. This theoretical proposition relating output and unemployment has been proposed by Okun (1962). This relationship is among the most famous in macroeconomics theory and has been found to hold for several countries and regions mainly, in developed countries (Christopoulos, 2004; Daniels and Ejara, 2009).

Okun's (1962) postulates a negative relationship between movements of the unemployment rate and the real gross domestic product (GDP) by focussing on the empirical relationship between unemployment and GDP variations. He emphasised that as a result of changes in aggregate demand, industry changes their production pattern which leads to changes in demand for labour which alter the unemployment rates.

This empirical relationship is a major part of every traditional macro-model as the aggregate supply curve is derived by combining Okun's law with the Phillips curve. Moreover, this relationship has also important implications for macroeconomic policy. It is simply very interesting to know the growth rate necessary to reduce unemployment (if this is even possible). Furthermore, the effectiveness of disinflation policy depends on the responsiveness of unemployment on the output growth rate (sacrifice ratio).

Unemployment problem in Nigeria has different dimensions. There are underemployment cases in which people receive incomes that are inadequate to support their basic needs, in terms of food, clothing and shelter. There are also cases of disguised unemployment where people take up jobs that are below their educational attainment and experience. The worst case of all is that of people seeking for job opportunities but who cannot find any either in the public or the private sector. Some people are willing and ready to set up enterprises themselves and engage in one type of economic activity or the other but are constrained by the prevailing poor macroeconomic environment. All these have contributed significantly to the high level of unemployment and poverty in Africa (Oni, 2006).

Another dimension of unemployment problem in Africa is the differentials in its manifestation by sector, sex and educational level. For instance, in Nigeria, available data from National Bureau of Statistics show that as the incidence of poverty is higher in rural than urban area, so also is the rate of unemployment, particularly in the late 1990s and 2000s. The incidence of poverty is higher in Nigeria among those who have little or no education than the other categories. In the same vein, the proportion of employment persons with little or no education is higher than all other categories of people with different levels of education. The objective of this study is to test the validity of Okun's law for Nigeria through. Specifically, the study intends to examine the impact of unemployment on the Nigerian Economic growth and testing the sensitivity of output to change in unemployment rates in both short run and long run.

2.   Unemployment in Nigeria:

There are many types of unemployment in Nigeria: structural unemployment, cyclical unemployment, frictional

unemployment and classical unemployment.

Structural unemployment occurs due to globalization and technological advancement which replace the workers with the machinery that causes the layoffs in the economy. It is also caused by mismatch of skills of workers from the underlying jobs.

Cyclical unemployment is also known as Keynesian unemployment; it occurs when the aggregate demand of the economy is not sufficient to give the jobs to everyone who wants to work, because aggregate supply of goods and services exceed from the aggregate demand that can discourage the production and consequently it reduces the workers.

Frictional unemployment occurs when the skills of the workers are mismatched with the underlying jobs, it is like a structural unemployment but it is short run in nature while structural unemployment has long lasting effect.

Classical unemployment arises when government set the wage rates above the equilibrium prices that cause labour to rush for the jobs in the labour market which exceeds from the existing vacancies.

Analysis of employment data for the past years shows that the rate of new entrants into the labour market has not been uniform. The rate was on the increase from 2007 to 2009, but declined significantly from 2009 to 2010, and increased again from 2010 to 2011. "Within the five-year period, there has been an average of about 1.8 million new entrants into the active labour market per year" (NBS, 2011).

Nigeria's unemployment rate increased to 23.9 percent in 2011 compared with 21.1 percent in 2010 and 19.7 percent in 2009, as revealed by the National Bureau of Statistics (NBS). The "Nigerian unemployment report 2011" prepared by the NBS shows that the rate is higher in the rural areas (25.6 percent) than in the urban areas (17.1 percent). The rise in the unemployment rate was largely attributed to the increased number of school graduates with no matching job opportunities, a freeze on employment in many public and private sector institutions as well as the slow disbursement of the capital budget by the Federal Government. The result of the survey by International Labour Organisation (ILO) in Nigeria shows that persons aged 0 to14 years constituted 39.6 percent, those aged between 15 and 64 (the economically active population), constituted 56.3 percent, while those aged 65 years and above constituted 4.2 percent. Before now, not a few economic watchers have queried the recorded Gross Domestic Product, GDP, growth rates in Nigeria, which over time are contrary to the growing rate of unemployment. For instance, GDP report for third-quarter of last year showed that the Nigerian economy, when measured by the real GDP on an aggregate basis, grew by 7.4 percent in the third-quarter of 2011 as against 7.9 percent in the corresponding quarter of 2010.

Amid this high rate of unemployment, the economic watchers have noticed that there is an increasing trend of disinterest by the emerging younger generation in highly labour-intensive works such as agriculture and factory work in preference for white collar jobs, resulting in many preferring to remain in the labour market rather than take up such jobs.

Unemployment has been a major problem for most countries across the world. The USA for example has increased from 5 percent in 2007 to 9 percent so far in 2011. Spain increased from 8.6 percent to 21.5 percent; UK from 5.3 percent to 8.1 percent. Ireland currently stands at 14.3 percent from 4.8 percent, Latvia from 5.4 percent to 16.5 percent, Greece from 8.1 percent to 18.4 percent, and Italy from 6.7 percent to 8.3 percent. The average for the Euro area is 10.7 percent. Even within the African continent, unemployment has risen with South Africa, Africa's largest economy having a higher rate than Nigeria at 25 percent, Angola at 25 percent, Botswana at 17.5 percent, Egypt at 11.8 percent, Kenya at 11.7 percent, and Namibia at 51 percent.

**Figure 1: NIGERIA'S UNEMPLOYMENT RATES TREND (1980-2012)**
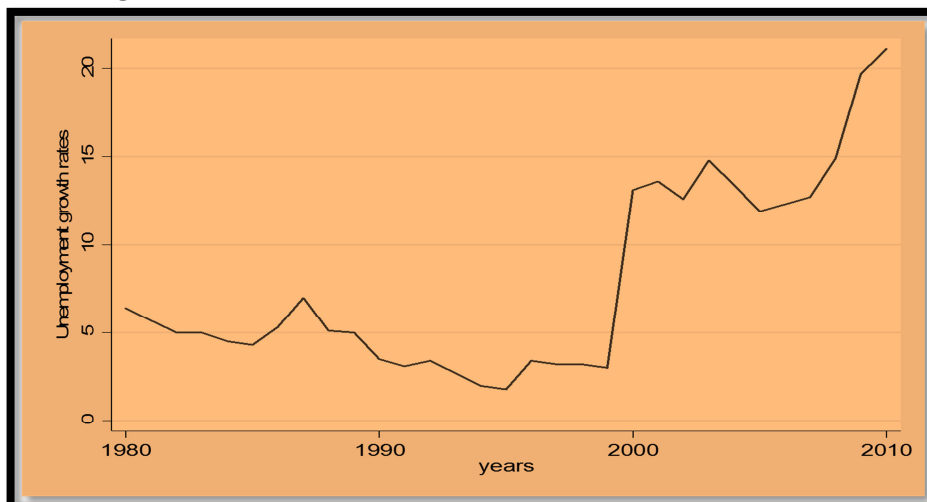
3.   Nigerian Economic Growth

Nigeria is a middle income, mixed economy and emerging market, with expanding financial, service, communications, and entertainment sectors. It is ranked 30th in the world in terms of GDP as of 2011, and its emergent, though currently underperforming manufacturing sector is the third-largest on the continent, producing a large proportion of goods and services for the West African region. Previously hindered by years of mismanagement, economic reforms of the past decade have put Nigeria back on track towards achieving its full economic potential. Nigerian GDP at purchasing power parity more than doubled from $170.7 billion in 2005 to $413.4 billion in 2011, although estimates of the size of the informal sector (which is not included in official figures) put the actual numbers closer to $520 billion. Correspondingly, the GDP per capita doubled from $1200 per person in 2005 to an estimated $2,600 per person in 2011 (again, with the inclusion of the informal sector, it is estimated that GDP per capita hovers around $3,500 per person). It is the largest economy in the West Africa Region, 3rd largest economy in Africa (behind South Africa and Egypt), and on track to becoming one of the 20 largest economies in the world by 2025.

The economy was vibrant as growth in domestic output was robust and broad-based in 2010, due to sound economic management policies and vast economic reforms. The real Gross Domestic Product (GDP), measured in 1990 basic prices grew by 7.9 per cent, compared with 7.0 percent in 2009. Growth in 2010 was attributed largely to the performance of the non-oil sector output which grew by 8.5 percent complimented by a significant increase in oil sector output

The performance of the Nigerian economy was mixed in 2011. Real GDP growth slowed to 7.4% in 2011 from 8.0% in 2010, driven predominantly by crop production, wholesale and retail trade and telecommunications sectors, which accounted for 28.0%, 28.8% and 21.4% of real GDP growth respectively during the year. Government revenue, propelled by positive price developments for crude oil in the international oil market, surged from ₦6,362.56 billion in 2010 to ₦9,987.63 billion in 2011. Overall, developments in the external sector of the economy were favourable in 2011, compared with 2010. However, the relatively high poverty incidence and unemployment still persist.

Figure2: Nigeria GDP Annual Growth Rate Trend (1980-2010):
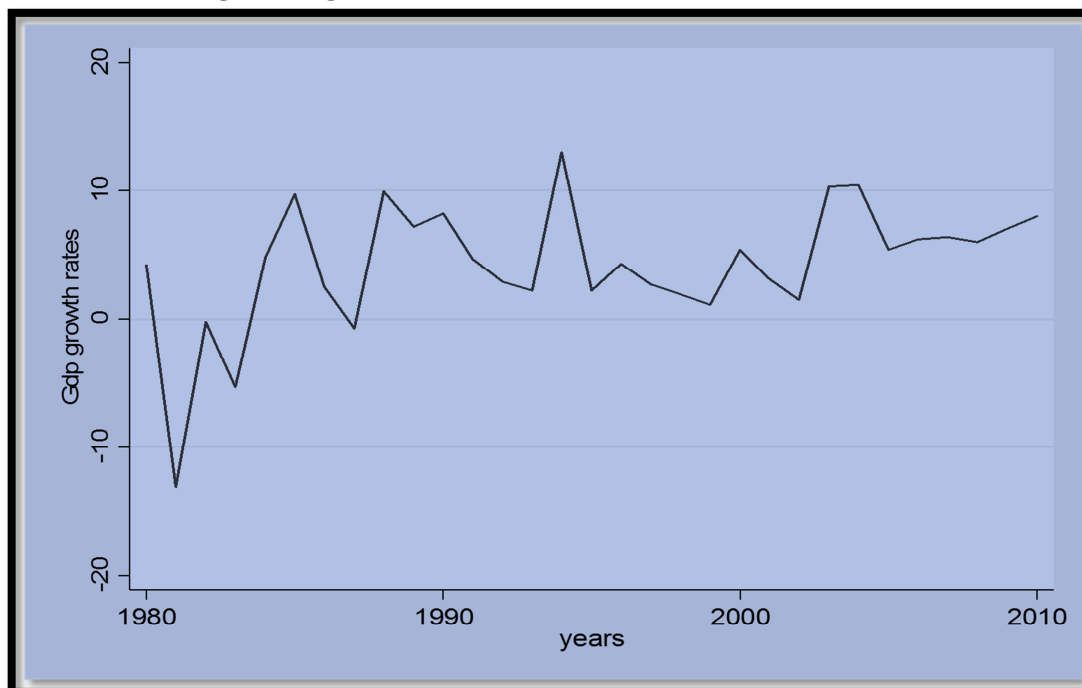
4.   Literature Review

A number of studies have empirically investigated the relationship between output and unemployment. Lee (2000) estimated the Okun's equation for all OECD countries and stressed that the relationship is not stable over time and is different across countries, but concluded that the impact of growth on employment is still valid.

Keller and Nabil (2002) suggest that economic growth in the MENA rejoin has been insufficient compared to the region's labour force and that high growth does not guarantee good labour market outcomes. On the other hand, the World Bank (2007) suggests that high unemployment is viewed as a reflection of the problems of structural and frictional unemployment in MENA countries. It seems that the World Bank Report suggested that Okun's coefficient is low or insignificant among MENA countries.

Freeman (2001) uses new developments in trend cycle decomposition to test Okun's Law for a panel of ten industrial countries, that Okun's original estimate for the U.S. of three points for each one percent reduction in the unemployment rate now averages at just under two points of real GDP growth for the sample countries. Pooled estimates for Europe are smaller than estimates for the rest of the sample. Freeman concluded that the law is still capable of proving estimates of the effects of unemployment on GDP.

Alanana, (2003) opines that unemployment is potentially dangerous as it sends disturbing signal to all segments of the Nigerian Society. The rate of youth unemployment in Nigeria is high, even at the period of economic normalcy i.e. the oil boom of the 1970s (6.2%); 1980s (9.8%) and the 1990s (11.5%).

Arewa and Nwakanma (2012) conduct an empirical evaluation of the relationship

between output and unemployment using the first difference and output-gap models of Okun's law. The study finds no evidence to support the validity of Okun's law in Nigeria.

Geidenhuys and Marinkov (2007) tried to give answer to the question of unemployment responds to changes in output in South Africa. For this reason, they estimated the relationship between economic activity and unemployment rate. The results indicated the presence of an Okun's law relationship in South Africa over the period 1970 -2005 with more evidence in favour of asymmetries during recessions.

Knotek (2007) also estimated Okun's law using its difference, gap and dynamic versions in which he calculated effects on unemployment rate by current output, past output level, past unemployment rate and analyzed that slowdown in economy coincided with increase in unemployment rate is not always the case in both short and long run.

Villaverde and Maza (2008) analyzed Okun's law for Spanish regions using data for the period 1980-2004. The results verified the existence of Okun's law for most of the regions and for the economy as a whole. However, the magnitude of Okun's coefficient differed for various regions due to regional productivity differentials.

Beaton (2010) investigates the stability and reliability of Okun's Law for Canada and the United States using a time varying parameter approach. He finds structural instability, with the sensitivity of the unemployment rate to movements in output growth increasing recently in both countries.

Although several studies have being conducted on the relationship between unemployment and output growth in developed and emerging economies, the rising unemployment rate in Nigeria has necessitate a study on its implication for economic growth.

5. Theoretical Framework

Arthur Okun (1962) was the first economist who studied the empirical relationship between unemployment and economic growth. He postulated that a 1% increase in the growth rate above the trend rate of growth would lead only to 0.3% in the reduction of unemployment. Reversing the causality a 1% increase in unemployment will mean roughly more than 3% loss in GDP growth. This relationship implies that the rate of GDP growth must be equal to its potential growth just to keep the unemployment rate constant. To reduce unemployment, therefore, the rate of GDP growth must be above the growth rate of potential output (Tatom, 1978).

Generally, economic theory that can be used in explaining the relationship between growth and unemployment is Okun's law. Okun's law is an empirical observation on the relationship between unemployment rate and economic growth. There would also be other factors that might affect the coefficient, e.g. labour market regulation, labor union, etc. For instance, in Japan, unemployment rates tend to vary less for a given gross domestic product (GDP), due to the strong social job protection. Okun coefficients can change over time because the relationship of unemployment to output growth depends on laws, technology, preferences, social customs, and demographics. Two methods were postulated in measuring Okun's coefficient; Okun's Law can be expressed in this form:

The initial form of the Okun's law can be written as the Gap method:

$$U_t - U_t^* = b(y_t - y_t^*) \text{ --------(1)} \qquad \text{Where:}$$

y_t = The real output product (GDP)

y_t^* =potential output

U_t = The natural level of unemployment

U_t^* = the potential unemployment

b = The Okun's coefficient

This is saying that the **change in unemployment** (unemployment in year t minus unemployment in year (t-1) is equal to a **negative parameter**, β which is less than one, which shows the responsiveness of unemployment to output, multiplied by the **difference** between output growth in year t and the normal growth rate of output. The parameter is negative because it is saying when output growth goes above the normal growth rate, then unemployment will fall. When output growth is below the normal growth rate, unemployment will rise. That means when output growth is on the normal growth rate then unemployment will be stable.

The second method is the use of Okun's first-difference method: This method helps to indicate the sensitivity of output to unemployment changes.
Given:

$$\Delta U = a - b(\Delta Y/Y) \text{ ---------(2)}$$

Then, $b\Delta U_t = a - (\Delta Y/Y)$. This paper focuses on the well known difference version which highlights that the change in unemployment rates is driven by the growth rate in real GDP. This is based on the assumption that an increase in output will need more factor input leading to a lower unemployment rate. The difference version, written as a linear regression model, is given by: $U_t - U_{t-1} = \alpha + \beta(Y_t - Y_{t-1}) + \varepsilon t$.
Where u_t represents the unemployment rate in t, Y_t symbolizes the level of real GDP and εt is the error term which satisfy the usual properties. The parameter β is called the Okun's coefficient and is expected to have a negative sign.
Thus β estimate gives a negative coefficient between output growth and unemployment rates.

6. Methodology
Model Specification: Using the knowledge gained from the surveyed literature, the study used a standard difference version of Okun's law, which is given as follow:

$$U_t - U_{t-1} = \propto + \beta(y_t - y_{t-1}) + \varepsilon_t \text{ --------(1)}$$

Where: y = The real output product, u = The level of unemployment, e = The white-noise disturbance term in equation 1, the parameter (β) is known as the Okun's coefficient and indicates changes in real output caused by changes in unemployment rate.

7. Discussion of Findings
7.1   Unit Root Test: This was carried out on the variables to test for their stationarity at levels and at first difference using Phillip Perron test statistics. The unit root estimation shows that the growth rate of GDP is a stationary at level, however unemployment variables has unit root problems at I(0) and is made stationary at first difference. Since the order of integration variables is zero and one, we can confidently apply the Johansen cointegration test and Error Correction Model in testing for the short and long run dynamism on the two variables.

7.2   Jonhansen Cointegration Test
It was observed from the long run cointegration estimate that unemployment rate has an insignificant effect on output growth in Nigeria. This can be seen from the increasing trend in both unemployment and the growth of the real GDP in the country. This is against the a priori expectation. The implication of this is that the output growth in the economy is insensitive to the unemployment situation in the economy.

7.3   Error Correctiom Model
Evidence from the Error Correction Model results indicate that a 1% change in unemployment will lead to 0.097% increase in real output in the first period and 0.069% increase in the fourth period. Empirical evidence from the regression results also indicates that a unit change in three periods lags GDP leads to 0.11 unit change in the current GDP while a 0.07 unit change in two period lags lead to a reduction in the current GDP. The coefficient of the Error Correction Model is negative, indicating that 0.92 percent of the disequilibrium in the previous year would be corrected in the current year.

8. Conclusion
This paper found out that Okun's law is not valid in Nigeria. The economic situation is such that indicates a high growth rate and a high unemployment level as seen from the country's over dependence on oil as its major source of revenue. A few proportion of the country labour force is captured in this sector thereby promoting the nation with its high unemployment growth. The nation is characterized with high level of unemployment alongside with economic growth. Gross mismanagement of national resources in the nation also leads to misappropriation of funds and wasteful spending. Thus Okun's law does not hold for Nigeria. The results obtained in this study are in conformity with the one conducted by Arewa and Nwakanma (2012).
        These findings have significant implications for development programmes and policies introduced by the government of Nigeria which does not aim at declining unemployment rates but increasing growth rates. It was clearly seen that while unemployment was increasing, the economy was equally growing. This is as a result of over dependence on oil as a major source of revenue to the nation. Hence, this study recommends that activities by the government in promoting economic growth in the country should be geared towards promoting employment for the people. The nation's population growth rate should also be regulated.

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Appendix
Table1: Phillip –Perron Unit Root Test

Variables	At levels	Critical value at 5 %	At 1st Diff	5 % critical value	Order of Integration
GDP growth rate	-4.064794	-2.960411	-12.86176	-2.963972	1(0)
Unemployment	-0.160005	-2.960411	-6.357106	-2.963972	1(1)

Source: authors' computation.

Table 2: Johasen Cointegration Test

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	Critical Value (5%)	Prob.**
None *	1.000000	1102.178	15.49471	1.00000
At most 1	0.002466	0.074081	3.841466	0.7855

Trace test indicates 1 cointegration at the 5% level.

Table 3: Parsimonious Error Correction Model Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.038038	0.438279	18.34001	0.0000
UT(-1)	0.097759	0.044678	2.188073	0.0407 **
UT(-4)	0.069988	0.038955	1.796641	0.0875 *
YT(-1)	0.061628	0.039199	1.572185	0.1316
YT(-2)	-0.072878	0.036523	-1.995389	0.0598 *
YT(-3)	0.111309	0.027955	3.981750	0.0007 ***
YT(-4)	-0.064813	0.029876	-2.169396	0.0423 **
ecm(-1)	**-**0.927772	0.039255	23.63470	0.0000

Source: authors' computation.
R-squared 0.991647
Adjusted R-squared
 Durbin-Watson stat
*   **   *** indicates 10%, 5% and 1% level of significance respectively.

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