

# Unemployment Scourge: Rising to the Nigerian Challenge

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*The largest single cost of unemployment is lost production. People who cannot work do not produce—high unemployment makes the social pie smaller. Since short-run tradeoffs exist between unemployment, inflation and Gross Domestic Product growth, it is also important to get a better understanding of the relative economic costs that is involve. This study provides some input for policymakers' evaluation of the tradeoffs. For the reason that the dynamic of output-unemployment link in Nigeria are somewhat more complicated and defile some economic theories. Thus, this paper present a ballpark methods from Okun's law, Philips curve to Ball's sacrifice ratio, that bear directly on measuring the short-run and long-run tradeoffs. With a sacrifice ratio of 4, that is found by this study, policymakers will have to frequently decide how hard to fight an inflationary shock, knowing that the less they accommodate, the more unemployment and less output they will achieve.*

*Keywords:* GDP growth, Inflation, Nigeria, Philips curve, Okun's law, Unemployment.

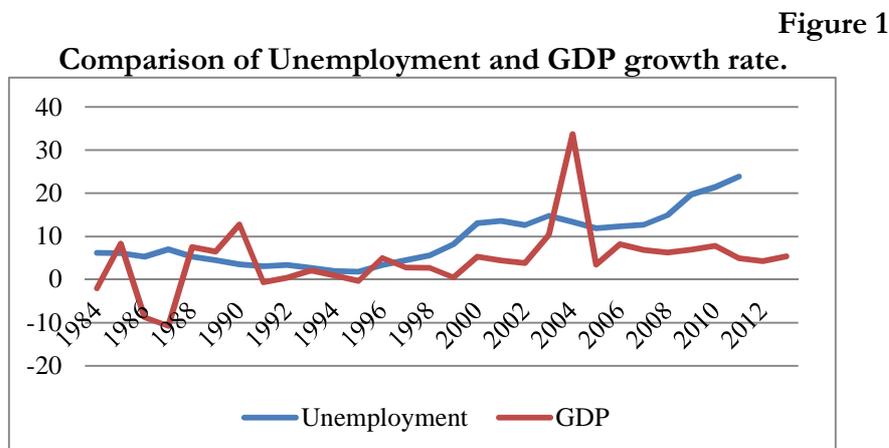
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## Introduction

The rate of unemployment is an important indicator of how well an economy is performing and the largest single cost of unemployment is lost production. People who cannot work do not produce—high unemployment makes the social pie smaller. The continuous increase in the Nigeria population led to an average of about 1.8 million new entrants into the active labor market per year in the last 8 years, resulting in a dramatic increase in the unemployment rate without a corresponding increase in the Gross Domestic Product “GDP” (See Figure 1). The high cost of lost output is amounted to billions of dollars per year. Manufacturing has become comatose as industries like textiles, shoes, tyres, food, glass, carpets, rugs; iron and steel which would have produced jobs for millions of unemployed have relocated to other neighboring countries.



Data sources: \*Central Bank of Nigeria: Major Economic, Financial and Banking Indicators, April 1998 \*\* National Bureau of Statistics (2014)

It is not uncommon for a family to have 2 to 3 members flaunting university degrees still searching endlessly for employment. Many of

these jobseekers graduated over six years ago without any hope of getting job, becoming socio-economic liabilities not only to their parents, families, and friends but also to the society. The unemployed individuals suffer both from their income loss while waiting to be employed and from the related social problems that long periods of unemployment cause. The costs of unemployment are the psychological and financial distress of the unemployed, as well as the loss of output. In addition, higher unemployment tends to hit the poorer members of society disproportionately. Psychologically, the unemployed usually experience trauma, anger, frustration, low self-esteem, negative life satisfaction, unhappiness and mental disorder including depression and acute stress (Akwara, et al. 2013). Society on the other hand loses from unemployment because total output is below its potential level. Also the costs of unemployment are borne very unevenly with large distributional consequences. In other words, the costs of a recession are borne disproportionately by those individuals who lose their jobs—there is an old joke about this; Person 1: What is the difference between a recession and a depression? Person 2: A recession is when you lose your job and a depression is when I lose my job. An individual who graduated during a recession faces a bad luck of enormous difficulty in starting a career, but for those who had the good fortune to graduate during a boom, would have gotten off to a much quicker start. The situation in Nigeria must have being a bad joke since Nigeria is the largest oil producer in Africa, the 8th largest in term of reserve in the Organization of the Petroleum Exporting Countries (OPEC) and the world's 4th largest exporter of liquefied natural gas. Nigeria is the largest economy in Africa with US\$522.64 billion in 2013 after GDP rebasing, and 7% average GDP growth rate in the last 4 years (National Bureau of Statistics, 2014).

In order to determine the Nigeria sacrifice ratio, there is a need to know the natural rate of unemployment, and to find the shout run

relationship between unemployment, GDP and inflation. To find out how much tradeoff policymakers will have to make between inflation, unemployment and GDP, it is necessary to first find out how much unemployment is necessary to reduce inflation say by 3% point in the case of monetary policy. And finally this study will suggest policy recommendations in order to curb the devastating unemployment situation.

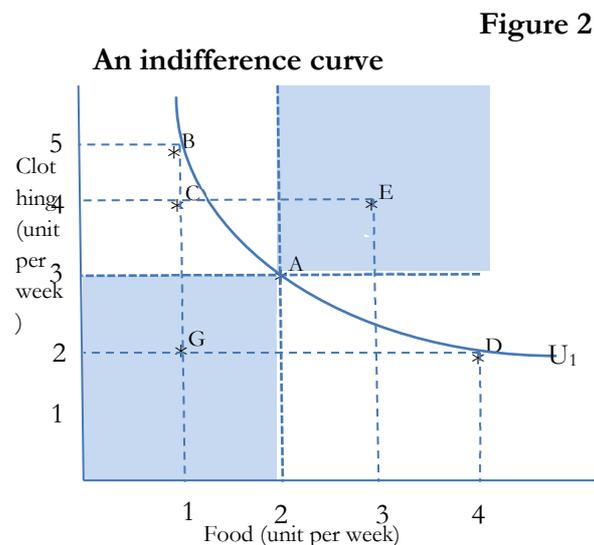
## LITERATURE REVIEW

### Theoretical framework

Short-run Philips curve concludes that a 1 point reduction in inflation costs 2 points of unemployment—holding inflation expectations constant. According to Okun's law, 2% point of unemployment cost 4% of output. Thus the implied sacrifice ratio is 4. Ball (1994) estimate accounted for an important element omitted when paste together the Philips curve and Okun's law during the disinflation process. The drop in expected inflation causes a downward shift along the Philips curve and lowers the sacrifice ratio. Ball's estimation of 2.39 sacrifice ratio implicitly includes this extra kick. Either 2.39 or 4 indicate a very high output cost of disinflation. Hence, high levels of joblessness have damaging macroeconomic effects, depressing effective demand in the economy, reducing economic growth and wasting productive potential (Agenda Council on Employment, 2014)

There are many reasons why productivity might be altered in the aggregate: the added workers, changed average hours, possible alternations in the sectoral distribution of employment, higher utilization rate of capital, and altered efficiency in the use of employees could make a difference in productivity at full employment. The tradeoff between output and unemployment according to Okun's estimates can also be associated with the indifference curve where an

individual has ranks of possible consumption choice as presented in Figure 2 below:



Because more of each good is preferred to less when describing individual preferences, we can compare market baskets in the shaded areas. Basket A is clearly preferred to G, while E is clearly preferred to A. However, A cannot be compared with B, C or D without additional information. The indifference curve  $U_1$  that passes through market basket A shows all baskets that give the consumer the same level of satisfaction as does market A; these include baskets B and D. The consumer prefers E, which lies above  $U_1$ , to A, but prefers A to C or G, which lie below  $U_1$ . The intuition behind this relationship is to present consumer preference in the case of perfect substitution as it also applies to Okun's law. The logic behind it is simple and straight forward. Output depends on the amount of labor used in the production process. In other to understand the importance of labor productivity, think of a refrigerator assembly line. Fifteen to twenty workers at full capacity might be able to produce 200 units of

refrigerators daily. If additional workers are employed, the efficiency on the assembly line will increase and so will the productivity.

To offset the resulting squeeze on profit margins due to the increase in cost of labor, firms would need to raise merchandise prices rapidly. Eventually, increases in unit labor costs are likely to fall back toward previous slower rates as workers are forced to accept lower wage growth to compensate for their slower productivity growth. But during the adjustment period which can last for a considerable period—there is upward pressure on inflation (Yellen, 2005). Since productivity and wages are positively related, if labor productivity increase by 5%, while nominal wages has only increased by 2%, inflation will be around -3%.

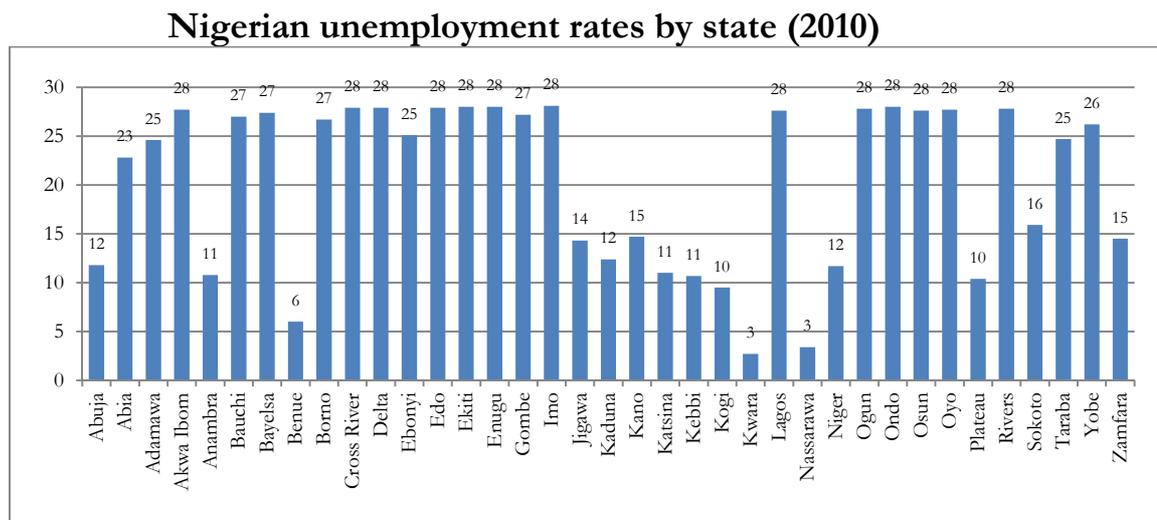
## **2.2 Empirical evidence**

The rate of unemployment is an important indicator of how well an economy is performing. According to the World Economic Forum's Outlook on the Global Agenda 2014, persistent structural unemployment is reported as one of the three most serious problems confronting policy-makers. Structural unemployment is aggravated by extraneous factors such as people with wrong skills in wrong locations, changes in demand patterns, technology change, competition and government policy.

The resulting measures of labor force are not pure reflections of supply; they are affected by job availability. In a slack labor market, people without a job may give up when they are convinced that job-hunting is a hopeless pursuit. They then may be viewed as having left the labor force though they stand ready and eager to work. The loss of job, death or divorce of the breadwinner of the family might force his fulltime housewife and or even the teenage children to seek work, leading to an increase labor force. In the case of Nigeria, the costs of

unemployment are borne very uneven with large distributional consequences among the states of the federation (see Figure 3).

**Figure 3**

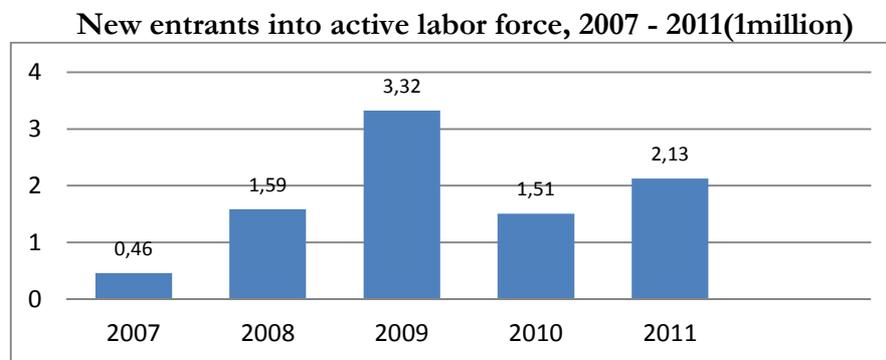


*Data source: National Bureau of Statistics (2014)*

Within the five year period 2007 – 2011 (see figure 4) there has been an average of about 1.8 million new entrants into the active labor market per year. The variation of new entrants into the labor market since 2006 can be attributed to several issues. Nigeria added 40 new universities (National Universities Commission, 2014), 15 polytechnics (National Board for Technical Education, 2014), and 9 Colleges of education between the time period of 2006 and 2013 (National Commission for Colleges of Education, 2014). As recorded by the National Bureau of Statistics, over 1.37 million students were enrolled in universities, polytechnics and colleges of education in 2006 and another 1.98million in 2007. Given that most courses are completed within 4 to 5 years, many of these 3.35million students that enrolled in 2006 and 2007 entered the labor force in 2010 to 2012. This does not

include those who dropped out of high schools or unable to get into tertiary institutions for various reasons and entered the labor market in the rural and urban areas. The global financial crisis in 2008 resulted in loss of jobs of Nigerians in Diaspora, prompted them to return home to seek for job opportunity. There is also an increasing trend of graduates disinterested in labor-intensive work such as agriculture in preference for white collar jobs.

Figure 4



Data Source: National Bureau of Statistics (2014)

### 2.3 Causes of unemployment

One of the main attributing factors of unemployment in Nigeria is the fall of standard of education, outdated school curricula and lack of employable skills. The course contents of most tertiary education not to mention secondary schools in Nigeria lack practical or entrepreneurial contents that would have equip graduates for the labor market or enabled them to become job creators rather than job seekers. In 2012, the national budget for education was 400.15billion naira “~~₦~~”(USD\$2.49million), however only 38.81% out of the 1.67 million candidates that sat for the West African Examinations Council “WAEC” examination scored credits in at least five subjects including English language and Mathematics (Premium Times Nigeria,2012). Within 2 years, the government invested an additional ~~₦~~159.25 billion

(USD\$940,599) into education. For 2014, the budget for the Ministry of education including Universal Basic Education is about ₦563.93billion (USD\$3.33million).<sup>2</sup> However, the failure rate increased to 68.71% of the 929,045 registered candidates-- by failure, this is taken to mean they couldn't achieve the minimum of five credits, English and Mathematics inclusive (Nigerian bulletin, 2014). So what this means is that, the problem of education goes beyond investing more in education financially. The current structure of the Nigerian demography has 47.5% of the female population below the age of 19 years, and 51% of male below the age of 19 years. With 49.25% of the total population representing the age of 19 years and below, a failure in WAEC goes beyond a failure in the ability to seek admission into the university, but a failure on the country. Unfortunately, it is always considered that reversing this trend as to do with more financial investment in education, with no evidence to support this claim. And little attention has been paid to what incentive the secondary school student has to pass WAEC.

It will be right to point out the two primary goals of a typically high school student on a journey to winning a prize. The first goal is to get out of high school and the second is to get admitted in a university and graduate with a good grade. These goals are focus on the ultimate prize. The ultimate prize is to get a high income paying job. Once the size and value of that prize starts to shrink, the incentive to get into university reduces and the incentive to pass WAEC also reduces. A firm called with the acronym "EFInA" Enhancing Financial Innovation & Access, which is a financial sector development organization that promotes financial inclusion in Nigeria. Recently concluded that 96% of jobs in Nigeria pay below ₦70,000 (USD\$450).

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<sup>2</sup> Compilation of Ministry of Education's Budget for 2011-2014 and the Universal Basic Education Commission's budget for 2014 from the Budget Office of the Federation, Nigeria Federal Ministry of Finance.

For this, we need to ask ourselves, is there any incentive for high school student to want to pass WAEC in order to get into university and after graduation start an endless search for a job. What an average student really look at is, what are the chances of getting a job after university education. So with a very low probability of getting a job, which is almost certain to be a low paid job without security, it gives absolutely zero incentive for a youth to aspire to get into university. According to the National Bureau of Statistic, 1.3million jobs were created in 2013, however only 36% of these jobs were created in the formal sector. A university graduate does not want to have gone through 6 years of secondary education and potentially 4-6 years of tertiary education based on their course of studies if they are lucky enough not to spend extra years due to the Academic Staff Union of Universities “ASUU” strike, and then get a job in the informal sector. Also the argument for entrepreneurs from many quarters would have passed in normal circumstances; however, the reality is that the entrepreneur requires seed capital and the evidence today shows that it is extremely hard if not impossible for a young graduate with little or no experience to get seed capital to start a venture that he has absolutely no experience in. So entrepreneurship in most times as a first option for a young graduate is not a realistic case.

The large scale unemployment level created soldiers for the dreaded Boko Haram terrorist group in the country’s northeast, create armed robbery in the southwest, kidnapping in the east , oil bunkering and insurgency in the Niger Delta (south-south) , ethnic conflicts and political thuggery all over the country. According to the popular adage “The idle hand is the devil’s workshop”; from all indications, youth unemployment is a menace in Nigeria and constitutes a real danger and a threat to Nigeria’s democracy (Okafor, 2011). The country is faced with a gross abuse and underutilization of human resources with direct impact on national productivity and competitiveness (Adesina, 2013).

## METHODOLOGY

It is important to see whether economic activities such as the rate of inflation and real GDP have significant influence on the unemployment rate evolution. Thus, presenting ballpark methods from Okun's law, Philips curve to Ball's sacrifice ratio, that bear directly on measuring the short-run and long-run tradeoffs and see how well they fit together in explaining the unemployment situation in Nigeria. This study employs time series data on unemployment, GDP and inflation from 1984-2011 and estimate the relationship using ordinary least square OLS to explain the short-run relationship.

$$\text{Estimation Equation: } \Delta\text{Unem} = \beta_0 + \beta_1 * \text{GDP} + \beta_2 * \text{Inf} \quad (1)$$

Where  $\Delta\text{Unem}$  represent change in unemployment rate, GDP as Gross Domestic Product and Inf as Inflation rate. This study's objective is to obtain estimates of the parameters  $\beta_0$ ,  $\beta_1$  and  $\beta_2$ . the parameter  $\beta_0$  is the intercept, while  $\beta_1$  and  $\beta_2$  slopes that measure the effect of a change in the GDP and Inflation rate on unemployment

$$\text{Substituted Coefficients: } \Delta\text{Unem} = 1.634 - 0.038 * \text{GDP} - 0.037 * \text{Inf} \quad (2)$$

$$(0.537) \quad (0.043) \quad (0.017)$$

$R^2 = 0.183$     Adjusted  $R^2 = -0.115$     Numbers of observations: 27

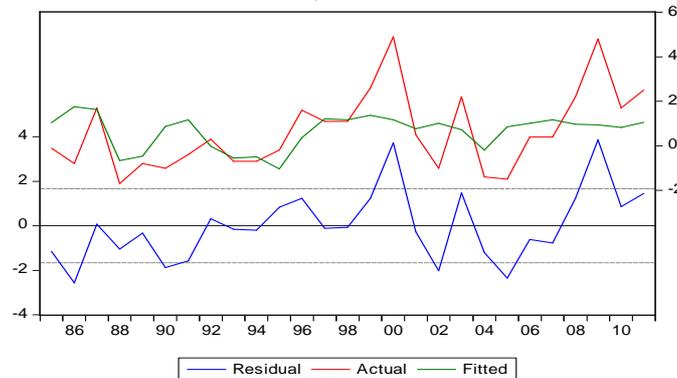
The intercept 1.634 indicates that if the other independent indexes were zero, unemployment rate would be 1.63%. Meanwhile, the coefficients of the independent variables are significantly different from zero: t-statistics for inflation is greater than 2 in absolute value; p-value (probability) less than 0.05. Hence, holding the other independent variables constant, a 1 point increase in inflation will

decrease unemployment by 0.037 point. However, the t-statistics of 0.892 for GDP is less than 2 in absolute value and its p-value is significant at 0.382. This rather surprising result is inconsistent with economic theory and should make us question the validity of the model. In order not to quickly draw conclusion, the  $R^2$  shows that only 18.3% of the variance of the change in unemployment is explained by the independent variables. Thus, there might be a need for us to expand the model to consider the possible effect of additional explanatory variables. Meanwhile, the standard error of regression indicates 1.662 as the average error in predicting the percent change in unemployment rate. The Durbin Watson "D.W" statistics at 1.369 which should be around 2 indicates that there is a likely problem of autocorrelation. D.W below 1.5 is a strong indication of positive first order serial correlation. Zero indicating positive autocorrelation and 4 indicating negative correlation.

In order to choose value for the regression parameters, we need a criterion for a "best fit". The criterion most often used is to *minimize* the sum of squared residuals between the actual values of  $g_t$  (Growth rate) and the fitted value for  $g_t$  obtained after equation(1) has been estimated. In 2011  $g_t$  was 4.65+10.84 (GDP + Inflation), therefore the predicted change in unemployment is  $1.634 - 0.038(4.653) - 0.037(10.841) = -13.86$ ; the actual change was 2.5(unemployment stayed at 23.9% in 2011 from 21.4% in 2010), so the residual is 16.36(actual-fitted data), which is 9.8 times the standard error of regression at 1.662. Figure (5) present the graphical explanation of the period under review.

Figure 5

Illustrations of actual, fitted and residual values



Source: Authors estimation using Eviews

The standard deviation shows whether or not the series are volatile. Unemployment rate is more volatile among the variables. Table 1 shows unemployment, GDP and inflation with p-value of 0.20, 0.01 and 0.09 respectively, indicating that we cannot reject the hypothesis that the residuals are normally distributed. However since GDP data is below the rule of thumb of a figure greater than 0.05; we can accept the alternative hypothesis that GDP data are not drawn from a Gaussian distribution. The coefficient of Skewness and Kurtosis including the Jarque-Bera probability show that all the variables are normally distributed time series. Hotelling & Solomons (1932) revealed that the skewness statistic will lie between  $-1$  and  $+1$ , If the skewness is greater than 1.0 (or less than  $-1.0$ ), the skewness is substantial and the distribution is far from symmetrical-- made up of exactly similar parts facing each other or around an axis; showing symmetry and a Gaussian distribution is expected to have a kurtosis of 3.0. In this case, we have Leptokurtic-- a statistical distribution where the points along the X-axis are clustered, resulting in a higher peak (higher kurtosis) than the curvature found in a normal distribution. This high peak and corresponding fat tails means the distribution is more clustered around the mean than in a mesokurtic or platykurtic

distribution, and will have a relatively smaller standard deviation (Investopedia, 2014).

Table 1

Normal distribution			
	GDP	INF	UNEM
Mean	0.247218	-0.258509	0.655556
Median	-0.558135	0.314919	0.400000
Maximum	23.38159	43.22090	4.900000
Minimum	-30.29111	-43.56721	-1.700000
Std. Dev.	9.939647	17.54396	1.766425
Skewness	-0.647535	-0.343754	0.836487
Kurtosis	5.736758	4.976958	3.130921
Jarque-Bera	10.31293	4.928661	3.167980
Probability	0.005762	0.085066	0.205155
Sum	6.674874	-6.979741	17.70000
Sum Sq. Dev.	2568.711	8002.558	81.12667
Observations	27	27	27

*Source: Authors estimation using Eviews*

In order to ascertain the validity of the result, the stationarity of the variables need to be verified. At levels, the results do not show the acceptance of the null hypothesis of unit root at 5% and 10% for the variables (see Table 2). Given that all the variables are stationary at 5% and 10%, Johansen cointegration test was done. Trace test and Max-eigenvalue test indicates 3 cointegrating equations at the 5% level. \*denotes rejection of the hypothesis at the 5% level \*\*MacKinnon-Haug-Michelis (1999) p-values.

Table 2

## Unit root test

	Unemploy ment	G DP	Inflat ion	Philli ps- Perr on	Unemploy ment	G DP	Inflat ion
Augme nted Dickey- Fuller	-3.25	- 4.0 3	-4.54		-3.25	- 4.0 3	-4.54
5% level	-2.98	- 2.9 8	-2.98	5% level	-2.98	- 2.9 8	-2.98
10% level	-2.63	- 2.6 3	-2.63	10% level	-2.63	- 2.6 3	-2.63

Better still in the long run, we can find the natural rate of unemployment that can tolerate an allowed gradual increase of prices which involves living with manageable and acceptable unemployment. Unless there is an exogenous shock, real GDP is reduced by 2% to 3% according to Okun's law. In order to find the sacrifice ratio, we need to know how much unemployment is necessary to reduce inflation by 3% point from 10.84% in 2011. Let  $\pi$  be inflation,  $\pi_e$  is expected inflation,  $U$  for unemployment, and  $U^*$  is natural rate of unemployment. Suppose that we start by plotting  $\pi$  against  $U$  to give the downward-sloping Philips curve:

$$\pi = \pi_{-1} = -0.5(U - U^*); \quad (3)$$

$$\pi = \pi_e = \pi_{-1}$$

$$\pi_{2011} - \pi_{2010} = \pi_e = -0.5(U_{2011} - U^*)$$

$$10.84 - 13.72 = -2.88 = -0.5(23.9 - U^*)$$

$$= \frac{-2.88}{-0.5} = (23.9 - U^*)$$

$$5.76 = (23.9 - U^*) \Rightarrow U^* = 29.66$$

Thus the natural rate of unemployment for this particular parameterization is 29.66%. Using Okun's law to compute the sacrifice ratio to find out how much unemployment is necessary to reduce inflation by 3% point.

$$\begin{aligned}\pi - \pi_{-1} &= \pi_e - 3 = -0.5(U - 29.66) \\ \frac{-3}{-0.5} &= (U - 29.66) \\ 6 &= (U - 29.66) \\ U &= 6 + 29.66 = 35.66\end{aligned}$$

With natural rate of unemployment of 29.66%, if we want inflation rate to reduce by 3%, we will require an unemployment rate of 35.66%. According to Okun's law, for every 1% point increase in unemployment rate, GDP will be about 2% below potential rate. Hence, GDP need to decrease by 12% :  $(2 * (35.66\% - 29.66\%))$ .

$$\text{Hence sacrifice ratio} = \frac{-0.12}{-0.3} = 4\%$$

## CONCLUSION AND POLICY RECOMMENDATION

The dynamics of the output-unemployment link in Nigeria are somewhat more complicated. Average Nigerian would desire the best of all worlds. A situation with neither inflation nor excess unemployment; that world however is not available. In the meantime, policymakers will have to frequently decide how hard to fight an inflationary shock, knowing that the less they accommodate, the more unemployment and less output they will achieve. According to Dr. Ngozi Okonjo-Iweala, the Minister of Finance and Co-coordinator of the economy; the country was able to create 1.6million jobs, therefore getting close to the 1.8million that enter the job market. However there is a pool of 5.3million unemployed graduates that have accumulated over the years. For this reason, government will need to

come up with strategies that will cover the number of entrants every year before taking care of the backlog.

Unemployment need to be fought head on because it is a major cause of poverty in Nigeria. Thus, conforming to prior expectation (Akinmulegun, 2014) and corroborates the findings of (Aiyedogbon & Ohwofasa, 2012). Although the situation goes beyond the 4% sacrifice ratio that this study found, since the  $R^2$  from the econometric evaluation shows that only 1.8% of the variance of the change in unemployment is explained by inflation and GDP growth rate with other unexplained factors responsible for the larger part of the unemployment rate.

In order to curb the unemployment menace, charity should begin at home—government need to curtail its administrative cost of governance, by eradicating wastage in the system. With a record of 7% average GDP growth rate in the last 4 years without a corresponding effect on unemployment rate, all hands need to be on deck. Government need to ensure that educational systems are responsive to the needs of the labor market and that students complete their schooling with the essential skills needed to find work, through collaboration with cooperate organizations. Aggressive emphasis on entrepreneurial education from elementary to tertiary levels is needed. To improve the labor market, importance need to be placed on vocational and technical trainings. The duties of university and polytechnic student on internship or industrial attachment should henceforth not be reduced to photocopying of documents or other clerical duties but to acquire on the job training related to their field of studies in order to make them productive workers for the longer term.

Record has shown that agriculture can bring back the Nigerian lost glory if properly managed. Government need to capitalize on it by improving on the agriculture processes to make it attractive and source

of employment for the unemployed youth. Funds running into billions of dollars that are either missing, stolen or unremitted to the federation account should be investigated recover and channeled into ventures which will provide jobs for millions of jobless youth to reduce the unemployed population. The Nigeria Industrial Revolution Plan NIRP also needs to be fast-track by providing enabling environment for investment to thrive and desist from any trade agreement that will undermine the NIRP by exporting jobs abroad and importing poverty.

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