



**The Impact of Unemployment and inflation on Economic Growth in Nigeria
(1981 – 2014)**

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Abstract

Purpose - To investigate and determine the effects of unemployment and inflation on economic performance in Nigeria within the specified period as in the title and to establish the relationship between unemployment and inflation with Real Gross Domestic Product in Nigeria.

Design/methodology/approach - Ordinary Least Square (OLS) technique was adopted with various diagnostic test to determine how fit are the data for the analysis.

Findings - 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. The results indicated that unemployment and inflation are positively related to economic growth.

Research limitations/implications - The study uses only OLS and Diagnostic to carried out the analysis and it only cover the period from 1981 to 2014.

Originality/value - The originality of this study lies on findings and interpretation of the result of regression analysis. The positive relationship between unemployment, inflation and RGDP indicates that Nigeria RGDP is driven by oil revenue that employs very limited highly skilled labour and the price of output of crude oil is determined externally which may not response as expected to growth of output in the country.

Keywords: Cointegration, economic growth, inflation and unemployment.

JEL Classification: E-011

1. Introduction

Unemployment and inflation has been an issue of concern, most especially in developing country like Nigeria, to policymakers and researchers alike. This is because unemployment and inflation are one of the key macroeconomics indicator and determinant of economic growth and development which is the priority of any economy. The Nigerian economy has remained largely underdeveloped despite the increases in growth rate declare every year. In 2014 budget, Nigeria Economy was projected to grow at 4.5% and in 2015 budget it was projected to grow at 5.5%, a figure which is far higher than the developed country like USA that recorded the growth rate of 2.2% in 2014. The growth in Nigeria economy has been described as exclusive growth which is worrisome and calls for concern. The per capita income is low, unemployment and inflation rates are high. There are many socio-economic challenges. The economy has continued to witness economic recovery which is immediately followed by economic recession and depression.

The situation in Nigeria is disturbing. The various macroeconomic policies by government have been

unable to achieve desired goals of price stability, reduction in unemployment and sustained economic growth. The fluctuations in the economy have confirmed the need to manage the economy effectively. The essence of macroeconomic management underlines the rationale of the government as a vital economic agent. However, it appears that government intervention has not been able to cure the ills in the economy.

For several decades, economic performance has not been impressive. The continued economic crisis, with the associated problems of high inflationary pressure, high exchange rate, debt overhang, adverse balance of payment and high inflation rates is difficult to explain. Against a high rate of unemployment and underemployment, a large public sector, low wages and poor working conditions has been persistent high inflation rate in Nigeria. Also, underemployment and unemployment are prominent feature of the informal labour market as well. Consequently, the full potentials of labour-surplus economy have not been fully exploited (Aminu and Donga 2014).

Unemployment and inflation are two intricately linked economic concepts. Over the years there have been a number of economists trying to interpret the relationship between the concepts of inflation and unemployment. Phillips A.W (1958) observed that there are two possible explanations of this relationship – one in the short term and another in the long term. In the short term there is an inverse correlation between the two. As per this relation, when the unemployment is on the higher side, inflation is on the lower side and the inverse is true as well.

The relationship between unemployment and inflation can be better explained with Phillips curve. In the short term the Phillips curve happens to be a declining curve. The Phillips curve in the long term is separate from the Phillips curve in the short term. It has been observed by the economists that in the long run, the concepts of unemployment and inflation are not related.

As per the classical view of inflation, inflation is caused by the alterations in the supply of money. When money supply goes up the price level of various commodities goes up as well. The increase in the level of prices is known as inflation. According to the classical economists there is a natural rate of unemployment, which may also be called the equilibrium level of unemployment in a particular economy. This is known as the long term Phillips curve. The long term Phillips curve is basically vertical as inflation is not meant to have any relationship with unemployment in the long term.

It is therefore assumed that unemployment would stay at a fixed point irrespective of the status of inflation. Generally speaking, if the rate of unemployment is lower than natural rate, then the rate of inflation exceeds the limits of expectations and in case the unemployment is higher than what is the permissible limit then the rate of inflation would be lower than the expected levels.

The Keynesians have a different point of view compared to the Classics. The Keynesians regard inflation to be an aftermath of money supply that keeps on increasing. They (Keynesians) deal primarily with the institutional crises that are encountered by people when firms increase prices. Firms make huge profit by increasing the prices of the goods and services that are provided by them. Also government increases money supply in order to meet up with this demand, so that the economy may keep on functioning.

Unemployment and Inflation are issues that are central to the social and economic life of every country. The existing literature refers to inflation and unemployment as constituting twin problems that explains the endemic nature of poverty in developing countries. It has been argued that continuous improvement in productivity is the surest way to reduce inflation. Growth in productivity provides a significant basis for adequate supply of goods and services thereby improving the welfare of the people and enhancing social progress.

From the foregoing, the study intends to empirically examine the effect of unemployment and inflation on

economic growth to determine what type of relationship exists between unemployment, inflation and economic growth. Although many scholars work indicates positive relationship between unemployment, inflation and economic growth but the effect of inflation and adverse effect of unemployed labour force on inclusive economic growth is very diver stating which prompt this study. To facilitate this task, the study was divided into four sections. The next section presents conceptual and empirical framework followed by methodology and data analysis. The last section concludes the study.

2. Literature review

2.1. Conceptual Literature

2.1.1 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 cause by adjustment in real wage. The Classical or real-wage unemployment occurs when real wages for job are set above the market-clearing level, causing number of job-seekers to exceed the number of vacancies.

Unemployment as defined by International Labour Organization (2009) is a state of joblessness which occurs when people are without jobs and they have actively sought work within the past four weeks. The unemployment is a measure of the prevalence of unemployment and it is calculated as a percentage by dividing the number of unemployed individuals by individuals currently in the labour force. In a 2011 news story, Business Week Reported, "More than two hundred million people globally are out of work, a high record, as almost two-third of advanced economies and half of developing economies are experiencing a slowdown in employment growth.

According to Jhingan (2003), unemployment can be conceived as the number of people who are unemployed in an economy, often given as a percentage of the labour force. Unemployment is also defined as numbers of people who are willing and able to work as well make themselves available for work at the prevailing wage but no work for them.

2.1.2 The concept of inflation

According to Balami (2006), inflation is a situation of a rising general price level of broad spectrum of goods and services over a long period of time. It is measured as the rate of increase in the general price level over a specific period of time. To the neo-classical and their followers at the University of Chicago, inflation is fundamentally a monetary phenomenon. In the words of Friedman M. (1996), "inflation is always and everywhere a monetary phenomenon and can be produced only by a more rapid increase in the quantity of money than output." To Hicks, "inflation is a continuous rise in general price level." Johnson, "inflation is a sustained rise in prices of goods and services."

Brooman in his own view sees inflation as continuous increase in the general price level." Dernberg and McDougall are more explicit when they write that "the term inflation usually refers to a

continuing rise in prices as measured by an index such as the consumer price index (CPI) or by implicit price deflator for gross national product.” Keynes and his followers emphasized the increase in aggregate demand as the source of demand-pull inflation.

2.1.3 The Concept of Economic Growth

Economic growth according to M. L Jhingan (2003), is the process whereby the real per capital income of a country increases over a long period of time, and is measured by the increase in the amount of goods and services produced in a country. A growing economy produces more goods and services in each successive time period. Thus in a wider perspective, it implies raising the standard of living of the people and reducing inequality of income distribution.

In the words of Zhattau (2013) economic growth is the basis of increase prosperity and it comes from accumulation of more capital and innovations which lead to technical progress, the idea similar to Solow (2002) growth model who sees economic growth in terms of growth in total GDP due to increase in population, technical progress and investment.

Growth according to Classical Economist signifies increase in the rate of investment. In other words, growth is a function of share of profit in the national income. There exists a positive relationship between higher rate of profit and higher rate of growth in the long run.

2.2 Empirical Literature

This section of the study presents the empirical literature on the relationship between economic growth, unemployment and inflation. As mentioned above many scholars have researched on the relationship between unemployment and economic growth and between unemployment and inflation using Phillips Curve model. For example, Stock and Watson (1999) used the conventional Phillips curve (unemployment rate) to investigate forecasts of U.S. inflation at the 12-month horizon. These authors focused on three questions. First, has the U.S. Phillips curve been stable? If not, what are the implications of the instability for forecasting future inflation? Second, would an alternative Phillips curve provide better forecasts of inflation than unemployment rate Phillips curve? Third, how do inflation forecasts differ from Phillips curve stack up against time series forecasts made using interest rate, money, and other series? They found that inflation forecasts produced by Phillips curve generally had been more accurate than forecasts based on other macroeconomic variables, including interest rates, money and commodity prices but relying on it to the exclusion of other forecasts was a mistake. Forecasting relations based on other measures of aggregate activity could perform as well or better than those based on unemployment, and combining these forecasts would produce optimal forecasts. Williams and Adedeji (2004) examined price dynamics in the Dominican Republic by exploring the joint effects of distortions in the money and traded-goods markets on inflation, holding other potential influences constant. They captured the remarkable macroeconomic stability and growth for period 1991 to 2002. Using a

parsimonious and empirically stable error-correction model, they found that the major determinants of inflation were changes in monetary aggregates, real output, foreign inflation, and the exchange rate. However, there was an incomplete pass-through of depreciation from the exchange rate to inflation. They also established a long-run relationship in the money and traded-goods markets, observing that inflation was influenced only by disequilibrium in the money market. Popovic (2009) conducted a research on inflation and unemployment in the EU: comparative analysis of Phillips regularity through correlation analysis of unemployment and inflation in EU for the 1998-2007 periods and was found that the simple linear correlation coefficient between them is negative. They concluded that the relation between unemployment and inflation is moderate and inverse (negative). Fakhri (2011) conducted research on the relationship between inflation and economic growth in Azerbaijan, he used Threshold model and found that there is a nonlinear relationship between inflation and economic growth with the threshold level of 13%. Chang-Shuai Li and ZI-Juan Liu (2012) conducted a study on the relationship among Chinese unemployment rate, economic growth and inflation; they employed Granger causality test, unit root, cointegration, VAR and VEC model. The study revealed that unemployment impacted negatively on growth while inflation impacted positively on growth in China. The study also revealed no causation between unemployment and inflation, but there is causation between unemployment and growth, while two-way causation existed between inflation and growth. Umar and Zubairu (2012), conducted a research on the effect of inflation on the growth and development of Nigerian economy and conclude that inflation affect economic growth negatively. Omoke and Ugwuanyi (2010) tested the relationship between money, inflation and output by employing cointegration and Granger-causality test analysis. The findings revealed no existence of a cointegrating vector in the series used. Money supply was seen to Granger cause both output and inflation. The results suggest that monetary policy can contribute towards price stability in Nigerian economy since the variation in price level is mainly caused by money supply. This shows that inflation in Nigeria is to much extent a monetary phenomenon. They find empirical support in context of the money-price-output hypothesis for Nigerian economy. M2 appears to have a strong causal effect on the real output as well as prices. Aminu and Anono (2012) conducted a study on the relationship between unemployment and inflation. They used OLS, ADF for unit root, Granger causality, Johansen cointegration, ARCH and GARCH techniques. The study revealed negative relationship between unemployment and inflation and no causation between unemployment and inflation; though they found that there is long-run relationship between the two phenomena in Nigeria. Aminu and Anono (2012) also investigated the effect of inflation on economic growth and development in Nigeria. They employed OLS, ADF and Granger causality and found that there is a positive correlation

between inflation and economic growth in Nigeria, though the results revealed that the coefficient of inflation is not statistically significant, but is consistent with the theoretical expectation, causation runs from GDP to inflation implying that inflation does not Granger cause GDP but GDP does. Bakere (2012) conducted a study on stabilization policy, unemployment crises and economic growth in Nigeria. He used OLS and found that the nexus between inflation, unemployment and economic growth in Nigeria were negative. Rafindadi (2012) conducted a study on the relationship between output and unemployment dynamics in Nigeria; he used OLS and Threshold model and found a negative nonlinear relationship between output and unemployment.

Aminu and Manu (2014) carried out research on analysis of unemployed resources and inflation in Nigeria from 1986 to 2010 using OLS technique and found that both unemployed human resources, rate of natural resource production (i.e rate of tapped resources), total inflation have positive impact on rate economic growth in Nigeria. Muhammad Shahid (2014), study the effect of inflation and unemployment on economic growth in Pakistan and find that there is inverse relationship between economic growth and unemployment. From the reviewed literature above, the relationship and impact of unemployment and inflation on economic growth is still ambiguous which calls for further research, hence the manifestation of this study.

3. Materials and methods

3.1 Data sources and Description

The sources of data for this study were mainly from National Bureau of Statistics, Central Bank of Nigeria statistical Bulletin and World Bank Data Base. This study captured economic growth as increase in output i.e real GDP, unemployment as the rate of unemployed labour force in relation total labour force in the country, while inflation is captured as percentage change in consumer price index The dominant manifestation of unemployment in Nigeria is structural/technological, advancement in technology tends to increase output, therefore, is expected that increase in

structural/technological unemployment would increase output. The dominant manifestation of inflation in Nigeria is demand-pull, when there is increases in demand, prices would also increase and producers will be encouraged to increase production, hence output will increase; therefore, is expected that, rise in inflation rate would raise output level, and therefore reduction or decrease in unemployment hence economic growth other factors remain constant.

3.2 Model Specification

This paper adopted the Okun’s (1962) type model and modified it to incorporate unemployment and inflation as the independent variables while economic growth proxy by the real GDP growth. The Okun’s law is the reduced version of the Phillips postulate. Assuming a linear relationship between the rate of growth of GDP, unemployment rate and inflation rate.

The model is specified as:

$$Rgdp = f(Unempl, Infl \dots \dots \dots) \tag{1}$$

therefore;

$$Rgdp = \beta_1 + \beta_2 Unempl + \beta_3 Infl + \mu \tag{2}$$

where;

Rgdp is the rate of GDP growth,

Unempl is unemployment rate and

Infl is inflation rate.

β_1, β_2 and β_3 - Parameters and

μ - Error term (white noise)

The apriori expectations are as follows:

$\beta_1 > 0, \beta_2 > 0$ and $\beta_3 > 0$ (i.e $\beta_1 \beta_2 \beta_3$ are non-negative values)

3.3 Estimation Procedure

To estimate equation 1, the stability properties of the variables employed were first investigated. Two-unit root tests were used in the study, i.e. the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP). The choice of two unit roots was informed by the imperatives of comparison and consistency. According to Hamilton (1994), the PP unit root test is generally considered to have a greater reliability than the ADF because it is robust in the midst of serial correlation and heteroscedasticity, though it has its own shortcomings. Johansen cointegration test were also employed to test the long run relationship between the variables used in the model.

Table 1: (Trend and intercept)

Variable	ADF		PP	
	Level	First difference	Level	First difference
<i>Rgdp</i>	-1.638591	-4.452431*	-1.709677	-4.355635*
<i>Unempl</i>	-1.579550	-4.724909*	-1.646040	-4.728238*
<i>Infl</i>	-2.566859	-5.477275*	-2.960676	-9.803352*

Note: *, ** and *** denote rejection of the null hypothesis at 1%, 5% and 10% level of significance respectively.

Tables 1 above shows the results of unit root test using both Augmented Dickey-Fuller (ADF) and Phillips-Perron (P-P) at level and first difference. The unit root test indicates that all the variables are I(1) and

they are stationary at first difference. To find out whether the variables has long run relationship, cointegration test was carried out and presented on Table 2.

Table2: Cointegration Test Results
 Dependent Variable: RGDP
 Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.734137	60.29533	29.79707	0.0000
At most 1 *	0.483008	21.87691	15.49471	0.0048
At most 2	0.090308	2.744829	3.841466	0.0976

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.734137	38.41842	21.13162	0.0001
At most 1 *	0.483008	19.13208	14.26460	0.0079
At most 2	0.090308	2.744829	3.841466	0.0976

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

The cointegration test results in Table 2 indicate the existence of long run relationship between Real Gross Domestic Product, unemployment and inflation in Nigeria as indicated by the Trace-statistics. The results show that there are 2 cointegrating equations at the 5

percent level. Both the maximal eigenvalues and Trace test statistics indicate that the hypothesis of no cointegration among the variables is rejected at the 5% significance level.

Table 3: Long-run estimates
 Dependent variable: LRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.981160	0.304170	16.37623	0.0000
LInfl	0.069480	0.074502	0.932590	0.3590
LUnempl	0.437368	0.069805	6.265532	0.0000

Diagnostics

R-squared	0.623949
Adjusted R-squared	0.597088
F-statistic	23.22898
Prob(F-statistic)	0.000001
Durbin-Watson stat	0.307901

Table 3 presents regression results for the growth model. The results indicate that the coefficient of unemployment are statistically significant at 1% as indicated by their P-values (0.0000) while the coefficient of inflation is found to be not statistically significant. The coefficient of unemployment is rightly signed (positive). The justification of positive relationship between economic growth and unemployment rate in Nigeria context is that economic growth is significantly driven by oil sector which required very high technical skills and few numbers workers (capital intensive mode of production). Inflation is also rightly signed positive, which means that inflation is rising as economic grows.

The justification of these is that the price of products that significantly drives the Nigeria’s economy is not internally determine but rather from outside, which does not tend to have effect on the general price level in the country as output increases. The F-statistic value of (23.228%), which measures the joint significance of the explanatory variables, is found to be statistically significant at 1% level as indicated by the corresponding probability value of 0.00001 in Table 3. This implies that the two variables taking jointly are significantly responsible for change in RGDP.

The R² value of 0.597088 (59.71%) implies that 59.71 percent variation in the rate of GDP growth is explained

by unemployment and inflation rates. The Durbin-Watson statistic 0.307901 in Table 4 is observed to be lower than R^2 (0.59708) indicating that the model is non-

spurious (meaningful), but there are elements of positive autocorrelation which are taken care of in the short run estimation.

Table 4 Short run estimates

Dependent Variable: D(LRGDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LRGDP(-2))	0.341931	0.124315	2.750521	0.0114
D(LRGDP(-3))	0.642753	0.131793	4.876978	0.0001
D(LINF)	-0.031089	0.007497	-4.146809	0.0004
D(LUNEMP(-2))	0.038508	0.017129	2.248141	0.0345
ECM(-1)	-0.066690	0.023010	-2.898264	0.0081

Diagnostics

R-squared	0.332763	Mean dependent var	0.047255
Adjusted R-squared	0.216721	S.D. dependent var	0.028510
S.E. of regression	0.025233	Akaike info criterion	-4.360926
Sum squared resid	0.014644	Schwarz criterion	-4.123032
Log likelihood	66.05296	Hannan-Quinn criter.	-4.288199
Durbin-Watson stat	1.924192		
JB - 1.66016(0.43601)			
ARCH - 0.1242(0.1450)			
RESET- 1.0398(0.3097)			
HETEROSK(WHITE) - 2.069680(0.3553)			

The above Table represents short run estimation of the variables; where general to specific method were used to sequentially eliminating variables that are not statically significant. From the Table 4 above, in short run unemployment are positively related while inflation was negatively related and they are all statically significant. As a result of various problems associated with long run estimation, various post diagnostics tests were conducted, such as normality test, heteroscedasticity test specification bias test and stability test. The results of the test indicate that the normality test (JB) statistic of 1.660168 with P-value of 0.436013 that is 43.60% probability which implies that the null hypothesis of normally distributed error term cannot be rejected. In addition, the estimated model satisfies the Breusch-Godfrey (BG) serial correlation and heteroscedasticity test as indicated on the Table 4 above.

Stability Tests

To determine the stability of the estimated coefficients of the real domestics' equation for Nigeria, the cumulative sum of recursive (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) tests, developed by Brown et al. (1975), were adopted. The CUSUM and CUSUMSQ tests are shown in Figures 1 and 2.

Figure 1: Stability test for unemployment and inflation in Nigeria

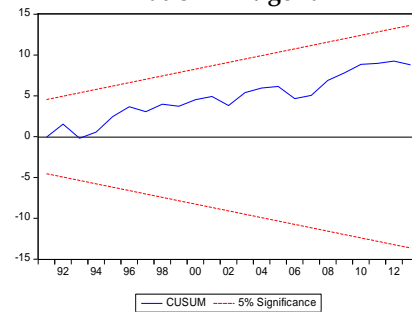
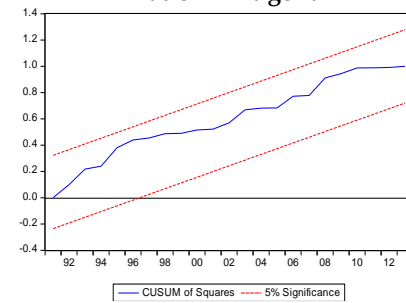


Figure 2: Stability test for unemployment and inflation in Nigeria



From figure 1 and 2, both the CUSUM and CUSUMSQ plots do not cross the 5% critical lines, implying that over the entire sample period of investigation, the stability of the estimated coefficients exist, so that the regression coefficients are reliable and suitable for policy making

5. Conclusions and Recommendations

This paper investigates the effect of unemployment and inflation on economic growth in Nigeria with the application of ordinary least square (OLS) and various diagnostic test techniques. The results of unit root test suggest that all the variables in the model are stationary at first difference and that of Johansen cointegration indicates that there existed 2 cointegrating equation, implying the existence of long run relationship between economic growth, unemployment and inflation. The results also revealed that unemployment and inflation are positively related with economic growth, which means unemployment and inflation does not hinder economic growth. These type of growth in economic is technically termed as 'Exclusive Growth' that is, growth that does not reflects in the standard of living of average citizen of the country. A major policy implication of this result is that concerted effort should be made by policy makers to increase the level of output in the other sectors of the economy in Nigeria by improving on productivity, in order to reduce unemployment and the prices of goods and services (inflation) so that Nigeria economy can have inclusive economygrowth. It is also recommended that non-oil sector should be expanded to boost the growth of output. Another policy implication of this study is that government should embark on production that requires labour intensive technique of production as against capital intensive since Nigeria is blessed with abundant labour force. Finally, the government should embark on policy that will reduce the number of imported goods drastically and encourage local production and consumption to encourage domestic industries; these will reduce unemployment and Inflation in Nigeria and increase output hence economic growth.

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**APPENDIX I
(RGDP, INFLATION AND UNEMPLOYMENT AT LEVEL)**

YEAR	RGDP		UNEMPL	INFL
1981	251.0523	N	N/A	20.81282
1982	246.7266		N/A	7.697747
1983	230.3808		3.9	23.21233
1984	227.2547		5.8	17.82053
1985	253.0133		6.1	7.435345
1986	257.7844		5.3	5.717151
1987	255.997		7	11.29032
1988	275.4096		5.3	54.51122
1989	295.0908		4	50.46669
1990	328.6061		3.5	7.3644
1991	328.6445		3.1	13.00697
1992	337.2886		3.4	44.58884
1993	342.5405		2.7	57.16525
1994	345.2285		2	57.03171
1995	352.6462		1.8	72.8355
1996	367.2181		3.8	29.26829
1997	377.8308		3.2	8.529874
1998	388.4681		3.2	9.996378
1999	393.1072		8.2	6.618373
2000	412.332		13.1	6.933292
2001	431.7832		13.6	18.87365
2002	451.7857		12.6	12.87658
2003	495.0072		14.8	14.03178
2004	527.576		13.4	14.99803
2005	561.9314		11.9	17.86349
2006	595.8216		12.3	8.239527
2007	634.2511		12.7	5.382224
2008	672.2026		14.9	11.57798
2009	718.9773		19.7	11.53767
2010	776.3322		21.4	13.7202
2011	834.0008		23.9	10.84079
2012	888.893		27.4	12.21701
2013	950.114		24.7	8.475827

Source; Central Bank of Nigeria statistical Bulletin, 2014

**APPENDIX II
(LOG OF RGDP, INFLATION AND UNEMPLOYMENT)**

YEAR	LRGDP	LINF	LUNEMP
1981	5.525661	3.035569	N/A
1982	5.508281	2.040928	N/A
1983	5.439734	3.144684	1.360977
1984	5.426072	2.880351	1.757858

1985	5.533442	2.006245	1.808289
1986	5.552124	1.743471	1.667707
1987	5.545166	2.423946	1.94591
1988	5.618259	3.998407	1.667707
1989	5.687283	3.921313	1.386294
1990	5.79486	1.996658	1.252763
1991	5.794977	2.565486	1.131402
1992	5.820939	3.797484	1.223775
1993	5.83639	4.045946	0.993252
1994	5.844206	4.043607	0.693147
1995	5.865465	4.288204	0.587787
1996	5.905956	3.376505	1.335001
1997	5.934446	2.143575	1.163151
1998	5.962211	2.302223	1.163151
1999	5.974082	1.88985	2.104134
2000	6.021829	1.936335	2.572612
2001	6.067924	2.937767	2.61007
2002	6.113208	2.55541	2.533697
2003	6.204572	2.641325	2.694627
2004	6.268293	2.707919	2.595255
2005	6.33138	2.882759	2.476538
2006	6.389941	2.108943	2.509599
2007	6.452445	1.683102	2.541602
2008	6.51056	2.449105	2.701361
2009	6.57783	2.445618	2.980619
2010	6.654581	2.618869	3.063391
2011	6.726234	2.383316	3.173878
2012	6.789977	2.502829	3.310543
2013	6.856582	2.137218	3.206803

Source;

APPENDIX III
Table 1: Unit Root Test Results
Test result with intercept and trend

Variable	ADF		PP	
	Level	1 st Difference	Level	1 st Difference
LRGDP	-1.638591 (0.7546)	-4.452431 (0.0067)	-1.709677 (0.7235)	-4.355635 (0.0085)
LUNMP	-1.577550 (0.7772)	-4.72409 (0.0038)	-1.646040 (0.7499)	-4.728238 (0.0037)
LINFL	-3.972637 (0.0205)	-3.785649 (0.0327)	-2.960676 (0.1583)	-5.798351 (0.0002)

Note; t-statistics in line value, while probability value in parenthesis