

IMPACT OF UNEMPLOYMENT AND INFLATION ON ECONOMIC GROWTH: AN EMPIRICAL INVESTIGATION

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ABSTRACT

Against a high rate of unemployment and underemployment, low wages and poor working conditions has been persistent high inflation rates in Nigeria. This paper aims at investigating the impact of unemployment and inflation on economic growth in Nigeria. Ordinary Least Square (OLS) technique in estimating the impact of unemployment and inflation on growth and Johansen cointegration test was employed to test the existence of long-run relationship between economic growth and the independent variables. The findings show that the existence of long run relationship between economic growth, unemployment and inflation. The results also reveal that unemployment impacts negatively on economic growth while inflation rate impacts positively on economic growth. This therefore, implies that a good performance of the Nigerian economy in terms of growth may be achieved with low rate of unemployment, and inflation in the country. Hence a major policy implication is that concerted effort should be made to reduce unemployment and stabilize the prices of goods and services (inflation) so as to achieve high, rapid and sustained economic growth rate in Nigeria.

Keywords: *Unemployment, inflation, economic growth underemployment.*

INTRODUCTION

The Nigerian economy has remained largely underdeveloped despite the huge human and natural resources, the per capita income is low, unemployment and inflation rates are high (Omoke & Ugwuany, 2010). The various macroeconomic policies by government have been unable to achieve sustained price stability, reduction in

unemployment and sustained growth cannot be achieved. The poor state of the economy has confirmed the need to manage the economy effectively. The essence of macroeconomic management underlines the rationale for the existence of government as a vital economic agent. The continuous economic crisis, with the associated problems of high inflationary pressure, high exchange rate, and 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 rates in Nigeria. Also, underemployment and unemployment is a prominent feature of the Nigerian economy. Consequently, the full potentials of labour-surplus economy have not been fully exploited.

In the 1960s and early 1970s, the Nigerian economy provided jobs for most Nigerian and absorbed considerable imported labour while inflation rates were low (Omoke & Ugwuanyi, 2010). The wage rate compared favourably with international standards and there was relative industrial peace in most of the years. Following the oil boom of the late 1970s, there was mass migration of people, especially the youth, to the urban areas seeking for jobs. Following the downturn in the economy in the early 1980s, the problems of unemployment and inflation increased, precipitating the introduction of the Structural Economic growth in Nigeria. The continuous economic crisis reflected in high inflationary pressure, high level of corruption, exchange rates distortions, debt overhang, high rates of unemployment to mention a few. Unemployment and inflation are two twin evils that have eaten deep into the fabric of the Nigerian economy over the years. The trends in economic growth rates, unemployment rates and inflation rates in Nigeria from Adjustment Programme (SAP) 1986-2014 have been puzzling. The data obtained from the Central Bank of Nigeria (CBN), 2015 Statistical bulletin revealed that by 1986 economic growth rate stood at 3.1 percent, in 1987 the value became negative -0.69 implying retrogression and was the least ever achieved for the period under review; the highest economic growth rates achieved was 11.36 in 1990 after which the rates has been abysmally until in 2003 when the growth rates hits 10.2 percent; from 2003 economic growth rate has been less than 10 percent, in 2012 the growth rate recorded was 6.58. The trend in economic growth has been fluctuating over the years under review.

The trends in unemployment and inflation rates in Nigeria from 1986-2014 revealed that by 1986 unemployment rate was 5.3 percent while inflation rate was 5.4 percent. Both unemployment rates and inflation rates were not stable but fluctuating over time. The lowest rates of unemployment and inflation recorded were 1.8 percent and 0.2 percent in 1995 and 1990 respectively. Unemployment reaches 24.7 percent by 2014 while inflation reaches the highest in 1999 (CBN, 2015). The main goals of macroeconomic policies were the achievement of high, rapid and sustained economic

growth, stable low unemployment and relative price stability but the trends above shows the contrary. Among the main and major problems of policy makers were how to achieved and maintain low and stable unemployment rate as well as relatively low prices so as to achieve high economic growth.

he perplexing trends of economic growth rate, unemployment rate, and inflation rates in Nigeria provide the need to examine the relationship between unemployment, inflation and economic growth in Nigeria. The objective of the study is to examine the impact of unemployment and inflation on economic growth in Nigeria. This study will cover the period of 1986-2014.

LITERATURE REVIEW

Conceptual framework

The concept of unemployment

According to Balami (2006) unemployment is conceptualised as a situation where in a worker is or workers are involuntarily out of work. This means that workers are willing and able to work but cannot find any work. Unemployment has been 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 was defined by International Labour Organization (2009) as 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, Business Week Reported,

"More than two hundred million (200) people globally are out of work, a record high, as almost two-third of advanced economies and half of developing economies are experiencing a slowdown in employment growth.

Jhingan (2001) 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 was 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. According to Aminu and Anono (2012) Unemployment can be conceptualized as total number of people who are willing and able to work, and make themselves available for job at the prevailing wage but no work for them. This therefore, implies that unemployment is a state of joblessness in the country.

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, 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." According Hicks, "inflation is a continuous rise in general price level."

Dernberg and McDougall (1976) are more explicit when they wrote 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 emphasise the increase in aggregate demand as the source of demand-pull inflation. Inflation can be conceptualized as persistence raise in the general price level of broad spectrum of goods and services over a long period as a result of cost-push. To the monetarists inflation is defined as too much money chasing too few goods.

Review of empirical literature

Obadan (1992) conducted empirical study on direct investment in Nigeria and found a positive and statistical significant relationship between economic growth and FDI inflow. Ekpo (1995) regresses the disaggregated components of government capital expenditures on private investment, using ordinary least squares approach with annual data for 1960-90. The findings showed that capital expenditures on transport and communication, agriculture, health and education positively influence private investments in Nigeria, which invariably enhances the growth of the overall economy.

Ogiogio (1995) examines the growth impact of recurrent, capital and sectoral expenditures over the period 1970-93. He observed the existence of long-run relationship between economic growth and government expenditures. The study also indicated that government investment programmes in socio-economic infrastructure provided conducive environment for private-sector-led growth. Odusola (1996) adopts a simultaneous equations model to capture the interrelationship between military expenditures and economic growth in Nigeria. He observed that aggregate military expenditure was negatively related to growth at 10 per cent significant level. And when decomposed into recurrent and capital military expenditures, the former was more growth retarding than the latter.

Omoke and Ugwuanyi (2010) test 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.

Adofu (2010) conduct a study on the role of FDI in accelerating the rate of economic growth in Nigeria. He employed OLS regression techniques and found a positive relationship between FDI inflow and GDP. Aminu and Anono (2012) investigate 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 consistence with the theoretical expectation, causation runs from GDP to inflation implying that inflation does not Granger cause GDP but GDP does.

Bakere (2012) conduct 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) conducts a study on the relationship between output and unemployment dynamics in Nigeria; and used OLS and Threshold model. He found a negative nonlinear relationship between output and unemployment.

Innocent, Nkechinyere, Ebele and Geraldine (2012) conduct a study on Economic growth and foreign direct investment in Nigeria; they used OLS and Granger causality techniques and found that foreign direct investment (FDI) impacted positively and insignificantly on economic growth proxy by GDP. The causality result indicated bidirectional causality between FDI and GDP. Aminu, Manu and Salihu (2013) investigate the effect of unemployment and inflation on economic growth in Nigeria. The study covers 1986-2010. They used OLS, Augmented Dickey-Fuller technique, Granger causality and Johansen cointegration technique and found that both unemployment and inflation impacted positively on the economic growth in Nigeria.

Economists have also considered the effects of fiscal policies on aggregate output. Attempts have been made to investigate the extent to which government activities affect economic growth. For instance, Ratner (1983), Aschauer (1989) and Munnell (1990) found that government investments were positively related to growth. Other studies such as Evans and Karas (1994), on the other hand, produced a mixed result. The adoption of ordinary least squares reveals a positive correlation between the two proxies

of government spending (services and capital spending) and economic growth. But when a two-stage least squares techniques were used, a positive relationship could not be established in most cases, especially in public capital.

Amin (1998) examined the effects of public investment expenditures on growth of Cameroon's economic activities. Using an aggregate production function, he discovered a positive relationship between the two, even though the relationship could not be statistically established. Joao and Francisco (2001) conduct research on does high inflation affect growth in the long and short-run in Brazil? They used Vector Autoregressive technique. They found a zero long-run response of output to a permanent inflation shock in the context of a high inflation country, and that inflation and output are reliably related in the long-run. The results indicated that in the short-run, there is a negative impact of inflation on output.

Mohsin and Abdelhak (2001) conduct research on threshold effects in the relationship between inflation and growth (a comparative study of industrial and developing countries) and found that the threshold is lower for industrialized countries than it is for developing countries. They also found negative and significant relationship between inflation and growth above the threshold level. They suggested low inflation for sustainable growth. Vikesh and Subrina (2004) conduct research on the relationship between inflation and economic growth in Fiji, they used simple correlation and causality techniques and found that there was a weak negative correlation between inflation and growth, while a change in output bears significant bearing on inflation. The causality between the two variables ran or e-way from GDP growth to inflation.

Ayesha and Rukhsana (2010) investigate the impact of inflation and economic growth on unemployment in Pakistan. They used Augmented Dickey Fuller test and Johansen-Juselius Maximum Likelihood techniques. They found that inflation significantly increased unemployment in the long term; economic growth had a significantly adverse impact on unemployment in the long run and short run respectively. Fakhri (2011) conducts 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%. Faraji and Kenani (2011) investigate the impact of inflation on economic growth in Tanzania. They used correlation coefficient and cointegration techniques. They found that inflation impacted negatively on economic growth, and no cointegration between inflation and economic growth during the period of study.

Garba (2010), and Olowononi and Audu (2012), have examined the nature and causes of unemployment in Nigeria and found disturbing trends. There are very few studies which have been undertaken regarding the effect of unemployment and inflation on economic

growth in Nigeria. Some of the existing studies used basically descriptive statistics (see Olowononi and Audu (2012), Aminu and Anono, (2012), Bakare, (2012) and Rafindadi, (2012) conducted similar studies and their findings were controversial especially in the area of impact of the two twin's evils (unemployment and inflation) on the growth of the Nigerian economy. Bakare found negative relationship between unemployment, inflation and growth, Rafindadi (2012) found negative non-linear relationship between unemployment and output growth while Aminu and Anono found positive relationship between inflation and economic growth in Nigeria. Another study was also conducted in the same vein in China by Chang Shuai Li and ZI-Juan Liu (2012) on unemployment rate, economic growth and inflation. The results revealed that unemployment impacted negatively on growth while inflation impacted positively on growth in China.

Mahmoud (2013) conducts study on the impact of inflation and unemployment on Jordanian GDP. He used simple correlation coefficient and ANOVA and found that inflation impacted positively on Jordanian GDP, while unemployment impacted negatively on Jordanian GDP. Much of the studies were from developed countries with few studies on developing countries like Nigeria.

Theoretical Literature

The Phillips Curve

In 1958 British economist A. W. Phillips published the results of an empirical analysis of historical data from the U.K. labour market. Phillips's study was intended to help answer one of the basic questions in macroeconomic theory, which concerns the cause of inflation. He hoped to find empirical support for the Keynesian view that the rate of wage inflation that is, the rate of increase in nominal (money) wage rates depended on the tightness of the labour market. Since the level of unemployment was a readily observable indicator of the tightness of the labour market, Phillips's immediate goal was "to see whether statistical evidence supports the hypothesis that the rate of change of money wage rates in the United Kingdom can be explained by the level of unemployment and the rate of change of unemployment. The logic behind Phillips's theory is very simple, if for some reason the demand for labour were high relative to its supply then equilibrium wage rates would be expected to rise above current wage levels, and there would be upward pressure on nominal wages as firms bid for additional workers. As additional workers were actually hired, the unemployment rate would fall. The larger the discrepancy between the quantity of labour demanded and the quantity supplied, the stronger the upward or downward pressure on wage rates. The opposite would be true when there was excess supply of labour and rising unemployment. Phillips found, as he expected that from 1861 to 1957, the growth rate of nominal wages was negatively correlated with the rate of unemployment that is low unemployment rates tended to be associated with rapidly rising wages while high unemployment rates were associated with slowly rising wages. Phillips also found that the strength of the

unemployment versus wage-change relationship seemed to depend on the level of unemployment. When unemployment was low, decreases in unemployment tended to be associated with big increases in wage inflation while when unemployment was high, decreases in the unemployment rate seemed to produce small increases in wage growth rates.

The Modified Phillips Curve

The Phillips curve enjoyed some success as it became a popular element of macroeconomic theories soon after and had great influence on the government policy of the 1960s. Because it was regarded as an instrument for economic policy, the government thought they could achieve low unemployment as long as they were willing to tolerate higher inflation and attain price stability through tolerating a higher Unemployment. (Blanchard and Illing, 2009). However, during the 1970s the inverse relation between inflation and unemployment however broke apart and the most of the OECD member states observed stagflation which means high inflation as well as high unemployment. But although the Phillips curve could not explain stagflation, a new relation between unemployment and inflation was discovered, namely the inverse relation of unemployment and changes in inflation. This relationship was the foundation for the modified Phillips curve and is still valid and applicable for many developed countries. It has evolved under the pressure of events and the progress of economic theorizing, incorporating at each stage such new elements as the natural rate hypothesis or the NAIRU (non-accelerating Inflation Rate of Unemployment), the adaptive expectations mechanism, and most recently, the rational expectations hypothesis.

METHODOLOGY

This paper used multi-dimensional econometric procedure to investigate the impact of unemployment and inflation on economic growth in Nigeria. The Ordinary Least Squares (OLS) techniques, and double log were employed to obtain the coefficients of the equation, the double log technique was used in estimating the elasticities of unemployment and inflation on growth, Augmented Dickey-Fuller and Phillips-Perron tests were employed to test the presence of unit root in the series, after which Johansen cointegration test was employed to test the existence of long-run relationship between economic growth and the independent variables. Secondary Data were sourced mainly from the publications of Central Bank of Nigeria (CBN) namely; Statistical Bulletin, as well as data from National bureau for statistic (NBS). The variables for which data were sourced include: inflation rate, and unemployment rate, and growth rate of the economy.

Regression analysis: - This paper used multiple regression analysis where the rate of growth (ECGR) serves as the dependent variable, while unemployment rates (UN), inflation rates (INF), serve as the explanatory variables.

The apriori expectation in this study is that unemployment is negatively related with economic growth. However, inflation is expected to be positively related to economic growth.

Models specification

This paper adopted model of growth by Aminu and Anono (2012) and incorporate unemployment. The models estimated were specified as follows:-

Linear Form

Model I

$$ECGR = f(UN)$$

Where ECGR is the rate of growth of the economy and UN is unemployment rate.

The model was specified as follows: $ECGR = \alpha_0 + \alpha_1 UN + \mu_1$

Apriori expectation: It is expected that $\alpha_0 > 0$ and $\alpha_1 < 0$.

Model II

$$ECGR = f(UN, INF)$$

Where ECGR and UN as defined above, and INF is inflation rate.

The model was specified as follows

$$ECGR = \beta_0 + \beta_1 UN + \beta_2 INF + \mu_2$$

Apriori expectation: It is expected that β_0 and $\beta_2 > 0$, $\beta_1 < 0$.

Double Log Form

Model III

$$\text{LogECGR} = f(\text{LogUN}, \text{LogINF})$$

Where LogECGR is the natural log of ECGR, LogUN, LogINF, is the natural log of unemployment, and inflation.

The model was specified as follows

$$\text{LogECGR} = \text{Log}\lambda_0 + \lambda_1 \text{LogUN} + \lambda_2 \text{LogINF} + \text{Log}\mu_3$$

The coefficients of the variables in this case served as the constant elasticities of the unemployment and inflation to economic growth rate in Nigeria.

Apriori expectation: It is expected that $\lambda_0, \lambda_2 > 0$ and $\lambda_1 < 0$.

These models assumed that output depends on employment of labour and capital which when fully employed assist the economy to grow. Inflation sets in at full employment.

Data Analysis and Discussion of Findings

Table 4.1 Growth effects of unemployment and inflation.

Variables	Model I	Model II	Model III
CONST	7.0563 (8.6455) P(0.0000)	6.9352 (8.1196) P(0.0000)	613940 (4.4677) P(0.0002)
UN	-11.6544 (3.4309) P(0.0021)	-13.0541 (3.0888) (0.0050)	-730232 (2.8220) P(0.0105)
INF		0.0176 (0.5713) P(0.5731)	423.0465 (0.2166) P(0.8367)
R ²	0.3201	0.292	0.2611
R ² Adjusted	0.2929	0.2733	0.1969
F-stat.	11.7709	5.8700	4.0637
P(F-stat)	0.0021	0.01083	0.0308
DW - stat.	1.7520	1.7511	2.4267

Source: Regression Results using EVIEW

Table 4.1 contains both simple and multiple regression results for the growth model. Model I represents the growth effect of unemployment rates in Nigeria. The constant and coefficient of unemployment were statistically significant at 1 per cent significance level both. The coefficient of unemployment significantly and negative affected economic growth rate in Nigeria. This is consistent with the theoretical expectation of this study and the Okun's law; this may be attributed to the manifestation of unemployment in Nigeria. The dominant manifestation of unemployment in Nigeria was structural. This result therefore, implied that as unemployment increases by 1 per cent economic growth rate reduces by 11.6544 per cent as indicated in model I above.

The F-statistics 11.7709, which measured the joint significance of the parameter estimates, was also found statistically significant at 1 per cent level as indicated by the corresponding probability value of 0.0021. This implies that all the parameters of the model were statistically significant affected economic growth rate in Nigeria.

The R^2 value of 0.3201 (32.01%) implied that 32.01 per cent total variation in economic growth rate was explained by unemployment in Nigeria. This further indicated that economic growth rate was not significantly explained by unemployment. Coincidentally, the goodness of fit of the regression remained low after adjusting for the degree of freedom as indicated by the adjusted R^2 ($R^2 = 0.2929$ or 29.29%). The Durbin-Watson statistic 1.7520 in table 4.1 was observed to be higher than R^2 0.3201 indicating that the model is non-spurious (meaningful). The Durbin-Watson statistics 1.7520 shows that there was some serial correlation among the error value though negligible thus making it possible to conduct a unit root test.

Model II represents the growth effect of both unemployment rates and inflation rates in Nigeria. The constant and the coefficient of unemployment were found statistically significant at 1 per cent as indicated by their probability values of 0.0000 and 0.0050. The coefficient of unemployment significantly and negatively affected economic growth rate in Nigeria. This also confirm the Okun's law and consistent with the theoretical expectation of this study. The coefficient of inflation was found statistically insignificant as indicated by its high probability value of 0.5731. The coefficient of inflation was insignificantly but positively affecting economic growth rate in Nigeria. This is consistent with the theoretical expectation of this study. This result, therefore, implied that as unemployment rates increases by 1 per cent economic growth rate decreases by 13.0541 per cent and increase in inflation rates by 1 per cent increases economic growth rate by 0.0176 per cent as shown in table 4.1 models II above. The F-statistics 5.8900, which measured the joint significance of the parameter estimates, was found statistically significant at 1 per cent level as indicated by the corresponding probability value of 0.0083. This implies that all the variables of the model were statistically and jointly significant affected economic growth rate in Nigeria. This result further indicated that both unemployment rates and inflation rates affects economic growth rate in Nigeria which if properly control may translate to improvement in economic growth rate.

The R^2 value of 0.3292 (32.92%) implied that 32.92 per cent total variation in economic growth rate was explained jointly by unemployment rates and inflation rates in Nigeria. This further indicated that economic growth rate was not significantly explained by unemployment rates and inflation rates. Coincidentally, the goodness of fit of the regression remained very low after adjusting for the degree of freedom as indicated by

the adjusted R^2 ($R^2 = 0.1969$ or 19.69%). The Durbin-Watson statistic 1.7511 was observed to be greater than R^2 0.3292 indicating that the model is non-spurious (meaningful) and can be used for policy. Durbin-Watson statistics 1.7511 showed there was negligible positive serial correlation among the error value thus making it possible to conduct a unit root test.

Model III represents the double log model that showed the growth effect of unemployment rates (UN), and inflation rates (INF), in Nigeria. The coefficients of the included variables served as their elasticities (the extent to which economic growth rate in Nigeria changes with respect to change in unemployment rates and inflation rates). The relatively high unemployment rates elasticity shows that economic growth in Nigeria was highly susceptible to change in unemployment rates. The coefficient of unemployment elasticity was found to be -4.6727 implying that economic growth rate in Nigeria was unemployment elastic (meaning little change in unemployment rates caused large change in economic growth rate in negative direction; therefore, more attention need to be given to the control of unemployment rates in the country. The coefficient of inflation elasticity was low, implying that economic growth rates in Nigeria was low susceptible to change in inflation rates. The coefficient of inflation elasticity was found to be 0.0246 implying that economic growth rate in Nigeria was inelastic elastic (meaning large change in inflation rates caused little change in economic growth rate in positive direction; therefore, more attention need to be given to the stabilization of prices (inflation rates) in the country. Unemployment rates was found significantly affecting economic at 1 per cent as indicated by its probability value of 0.0100; this implied that 1 per cent increase in unemployment rates will reduce economic growth rates by 4.6727 per cent. Inflation was found insignificantly affecting economic growth rates as indicated by its high probability value of 0.2611; the coefficient of inflation 0.0246 implied that 1 per cent increase in inflation will increase economic growth rates by 0.0246 per cent. Model III supported the previous results. Even though, some of the variables of this model were found statistically insignificant individually, but the F-statistics value of 4.0637, which measured the joint significance of the variables, was found statistically significant at 5 per cent level as indicated by the corresponding probability value of 0.0303. This implies that all the variables of the model were statistically significant and affected economic growth rate in Nigeria. This result was in agreement with the previous results and also showed that all the variables of the model were consistent with theoretical expectations of this thesis.

The R^2 value of 0.2611 (26.11%) implied that 26.11 per cent total variation in economic growth rate was explained jointly by unemployment rates and inflation rates in Nigeria. This further indicated that economic growth rate was not significantly explained by the included variables of the model since R^2 was less than 50 per cent. The goodness of fit of

The regression was found low after adjusting for the degree of freedom as indicated by the adjusted R^2 ($R^2 = 0.1969$ or 19.69%). The Durbin-Watson statistic 2.4267 in table 4.2 was observed to be greater than R^2 0.2611 also indicating that the model is non-spurious (meaningful). The Durbin-Watson statistics 2.4267 showed the absence/negative serial correlation among the error value.

The regression results of model I to III showed that economic growth rate has a significant positive intercept, signifying that there are other exogenous variables that may have significant impact on the economic growth but not captured in the model. This was consistent with the Keynesian position that GDP and economic growth has an autonomous component. Summarily, unemployment rates were observed to affect economic growth rates negatively which translate to reduction economic growth rate in Nigeria, inflation rates were observed to affect economic growth rates positively, which may translate to increase in economic growth rate.

Table 4.2: Unit root test

VAR	ADF 1(0)	CRITICAL (5%)	ADF 1(1)	CRITICAL VAL (5%)	PP 1(1)	CRITICAL VAL (5%)	REMARK	PROB. (ADF)	PROB. (PP)
ECGR	-2.662	-2.99	5.174	-3.005	7.536	-2.998	1 (1)	0.0004*	0.0000*
UN	0.733	-2.992	6.186	-3.753	4.991	-2.998	1 (1)	0.0000*	0.0006*
INF	-2.988	-2.998	4.684	-3.77	6.133	-2.998	1 (1)	0.0001*	0.0000*

*Stationary at 1percent

ADF = Augmented Dickey Fuller Statistics

PP = Phillips-Perron Statistics

The results of unit root test were contained in table 4.2. The results of both ADF and PP revealed that all the variables of the model were stationary at 1percent as indicated by their probability values. The result further indicated that economic growth rate (ECGR), unemployment rate (UN) and inflation rate (INF) were stationary at first difference 1(1). The ADF and PP statistics for all the variables are less than the critical values in negative direction.

The Johansen cointegration test

The Johansen cointegration test results confirmed the existence of long-run relationship between the growth rates of economy (economic growth), unemployment and inflation as indicated by the TRACE-Statistic. The TRACE-statistics results revealed that there was 2cointegrating equation at 5 per cent level. The Max- Eigenstatistics results revealed that there was 1cointegrating equation at 5 per cent level. Overall, these results are in agreement with similar study on Nigeria conducted by Aminu and Anono (2012) on the long run relationship between unemployment, and inflation in Nigeria.

Table 4.3 Johansen Long-run cointegrating equation

I Cointegrating Equation(s):	Log likelihood	
		-4.72137
Normalized cointegrating coefficients (standard error in parentheses)		
ECGR	UN	INF
1.000000	5.70659 (0.99343)	-0.23119 (0.18048)
T-Statistics	(5.74433)	(.28097)
Adjustment coefficients (standard error in parentheses)		
D(ECGR)	-1.310711 (0.45045)	
D(UN)	-0.000841 (0.02831)	
D(INF)	-0.797801 (0.43066)	

The adjustment coefficient for D(EC GR) is -1.310711 negative implying the existence of long run relationship between economic growth, unemployment and inflation in Nigeria. The coefficient of -1.31071 shows that in the long run the variable will adjust by 131 percent to go back to equilibrium. The long run coefficient of unemployment is 5.706590 implying the existence of negative long run relationship between unemployment and economic growth rates in Nigeria. The long run coefficient of inflation is -0.23119 implying the existence of positive long run relationship between inflation and economic growth rates in Nigeria.

CONCLUSION

In conclusion, the twin macroeconomic variables, unemployment and inflation are the major problems confronting Nigerian economy with complex economic and social outcomes. The inability of government to find a lasting solution to these problems has affected the economic life, economic activities and political system of the country as a whole. Therefore, there is a need for strong institutional collaboration for dealing with these two macroeconomic variables; unemployment and inflation as have been recommended above.

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