

Nexus Between Unemployment, Inflation and Economic Growth in Nigeria

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Abstract

Unemployment and inflation are twin evils that are bedeviling economies of the world and have continuously attracted the concern of economists. Most developing countries Nigeria in particular is battling with these problems. This study examines the nexus between unemployment, inflation and economic growth in Nigeria from 1981 to 2020. Diagnostic test was conducted to ascertain the behavior of the series. The Augmented Dickey Fuller (ADF) and Philips Perron (PP) test results are reported. Based on the test, the variables in the model are of mixed order of integration i.e., two of the variables are I(1) and one is I(0). The Autoregressive distributed lag (ARDL) bound co-integration test was conducted to check for possible long run relationship. It was found that there is a long-run relationship in the model. Thus, the ARDL ECM was used for the estimation. Results from the ARDL estimation reveal that the Error Correction Mechanism (ECM) has the expected negative sign with a high speed of adjustment of 71% back to equilibrium; there is a long-run negative relationship between unemployment and economic growth in Nigeria over the period of study; there is a long-run negative relationship between inflation and economic growth in Nigeria over the period of study. Based on these findings, this paper recommended that the government of Nigeria should spend more money on training and skill acquisition in order to combat unemployment. More so, excessive and galloping rise on the prices of goods and services in Nigeria should be control.

Keywords: *Unemployment, Inflation, Economic Growth, ARDL, Nigeria*

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Background to the Study

Unemployment and inflation twin evils that are bedeviling economies of the world and have continuously attracted the concern of economists. Many countries world over, developed and developing are battling with how to match the available vacancies with supply of labour. In other words, most countries of the world are striving hard to keep pace with the growing labour force. Unemployment has been one of the most persistent and unmanageable problems facing all industrial countries of the world (Jhingan, 2012). The goal of every public policy has been to remove unemployment, inflation and achieve full employment. In order to harmonise these efforts in battling unemployment, the goal 8 of the United Nations' 17 Sustainable Development Goals (SDGs) is on “decent work and economic growth”. The aim of this goal is to promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Successive governments in Nigeria over the years have in different times-initiated programmes to curb this problem. For instance, the SURE-P programme, N-Power etc., all are geared towards tackling the problem of unemployment. Incurtailing unemployment, economic growth has been recognized as a key variable that can address the menace. The contributions of economic growth to economic development cannot be overemphasized as it has been recognized as one of the necessary conditions for economic development (Seth, John and Dalhatu, 2018). The Nigerian economic growth has been described as exclusive one which is worrisome and calls for concern due to the prevalence of low per capita income, unemployment and high rate of inflation (Ademola and Badiru, 2016).

Supply of labour in Nigeria far outweighs demand for labour. The labour market cannot absorb the excess supply of labour in the country. Despite every effort to reverse the trend of unemployment and inflation they remained some of the trickiest challenge that Nigeria have had to contain with. Agitations all over the country and the song is the same, government give us jobs. Against this backdrop, this paper is aimed at investigating the nexus between unemployment, inflation and economic growth in Nigeria. This study is in five sections. Section one is the introduction, section two is the literature review, section three is the methodology, section four is the results and discussion, and section five is the conclusion and recommendations.

Literature Review

Conceptual Literature

Concept of Unemployment

International Labour Organization (ILO) (2009) defined unemployment as a state of joblessness which occurs when people are without jobs and they have actively sought work within the past four weeks. The classical economists defined unemployment as the excess supply of labour over the demand for labour which is cause by adjustment in real wage. Unemployment can be define as the number of people who are willing to work at the existing wage rate but do not fine any. According to Keynes, full employment is the absence of voluntary unemployment. This implies that unemployment can be voluntary and involuntary.

Concept of Inflation

Inflation is a controversial concept in economics literature. According to Jhingan (2012), the Neo-classical economists refer to it as a galloping rise in prices as a result of the excessive increase in the quantity of money. They posited that “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”. An economist therefore defines inflation as a continuous rise in prices. It is also defined as a persistent and appreciable rise in the general price level.

Concept of Economic Growth

Economic growth can define as increase in the total output of a country over a period of time. It is usually proxied by the Gross Domestic Product (GDP). It measures the economic progress over a period of time usually, one fiscal year. Seth, John and Dalhatu (2018), defined economic growth as a steady process of increasing the productive capacity of the economy and hence, of increasing national income, being characterized by higher rates of increase of per capita output and total factor productivity, especially labour productivity.

Theoretical Framework

Okun's law describes the relationship between unemployment and economic growth in an economy. The proposition that in cyclical fluctuations, the ratio of actual to potential real output generally rises by a greater percentage than the fall in unemployment. The theory argued that unemployment has negative correlation with economic growth in any given economy. On the bases of US data from 1960 to 1980, Okun (1962), postulated that a percentage decrease in unemployment rate leads to 3 percent increase in economic growth.

Empirical Review

Clement and Hlalefang (2018), examined the trends impact of unemployment on economic growth in South Africa using quarterly data 1994Q to 2016Q. The Autoregressive Distributed Lag (ARDL) technique was employed for analysis. The result shows that there is a negative relationship between unemployment and economic growth both in the short and long-run. Seth, John and Dalhatu (2018) investigated the relationship between unemployment and economic growth in Nigeria 1986 to 2015. The Autoregressive Distributed Lag (ARDL) bound testing and the parsimonious error correction model (ECM) of the ARDL model was used for estimation. The result shows that there is a long-run relationship between unemployment rate and economic growth in Nigeria. The results equally that unemployment in Nigeria is growth enhancing over the period of study.

Suleiman, Kassim and Hemed, (2017) investigated the impact of unemployment on economic growth in Tanzania using secondary data. The Dynamic Ordinary Least Square (DOLS) technique was used for the estimation. The result shows that unemployment has a negative but insignificant impact on economic growth in Tanzania over the period of study. The Granger causality test revealed unidirectional causality from economic growth to unemployment.

Michael, Emeka and Emmanuel (2016), investigated the relationship between unemployment and economic growth in Nigeria from 1980 to 2013. Secondary data was used for the analysis. Co-integration test, Vector Error Correction Mechanism (VECM), and the Granger causality test were used for the estimation. The VECM result shows that unemployment has a negative and significant impact on economic growth in Nigeria over the period of study. In a similar work, Dritsakis and Stamatou (2016), investigated the relationship between unemployment on economic growth in Greece 1995 to 2015. The Autoregressive Distributed Lag (ARDL) and ECM-ARDL technique was employed for the estimation. The result shows that there is a unidirectional causal relationship between and economic growth both in the short and long-run.

Ademola and Badiru (2016), examined the effects of unemployment and inflation on economic growth in Nigeria from 1981 to 2014. The ordinary least square (OLS), Error Correction Mechanism (ECM) was employed for estimation. The result shows that there is a positive relationship between unemployment, inflation and RGDP in Nigeria over period of study.

Airi, Ounakpo and Abebi-Atede (2016), investigate the impact on unemployment on Nigeria economy (1980-2010). By adopting the Ordinary Least Square Regression (OLS), the findings showed that unemployment has a negative effect on economic the Nigerian economy. Onwachuwu (2015), investigated the impact of unemployment on the economic growth of Nigeria from 1985 to 2010. The Ordinary Least Squares (OLS). It was found that unemployment does not have a significant impact on the economic growth of Nigeria.

Akeju and Olanipeun (2014), used the Okun's law to examine the relationship between unemployment rate and economic growth. Error Correction Model (ECM) and Johansen cointegration test were employed to determine both the short run and long run relationships among the variables employed in the study. The results show that there is both the short and the long run relationship between unemployment rate and output growth in Nigeria and both unemployment and economic growth are positively related.

In testing the theoretical proposition of the Okun's law, Kemi and dayo (2014) investigated the relationship between unemployment and economic growth in Nigeria. The Error Correction Mechanism (ECM) was used to estimate the data. The variables used in the study include real output growth, unemployment rate. The result shows that both the short and the long run relationship exist between unemployment rate and real output growth in Nigeria.

Kayode, Samuel and Silas (2014) studied the factors responsible for high unemployment in Nigeria and as well examined its social, economic and political implications. The study established that corruption in public and private sectors, individual levels, industrial sector decay and neglect of the agricultural sector are the major factors responsible for high unemployment and other scourge associated with unemployment. The finding of the study also showed that youth restiveness, widespread poverty, criminal activities and high rate of social vices are prevalent due to idleness.

Methodology

Data

The data for this study were obtained from Central Bank (CBN) statistical bulletin 2020 and World Development Index (WDI). The data is collected from 1981 to 2020. The variables for which data were collected are as specified in the model. Specifically, data on economic growth which is proxied by real GDP is obtained from the CBN statistical bulletin while data on unemployment and inflation are obtained from the WDI.

Model Specification

The functional form of the model is specified as follows:

$$RGDP = f(UNP, INF) \dots \dots \dots (1)$$

$$RGDP_t = \beta_0 + \beta_1 UNP_t + \beta_2 INF_t + \mu_t \dots \dots \dots (2)$$

Where β_0 is the intercept; $\beta_1 - \beta_2$ are the unknown coefficients. A priori, β_1 and $\beta_2 < 0$.

The Autoregressive Distributed Lag (ARDL) specification is as follows:

$$\Delta RGDP_t = \beta_0 + \sum_{i=0}^k \beta_{1i} \Delta RGDP_{t-1} + \sum_{i=0}^k \beta_{2i} \Delta UNP_{t-1} + \sum_{i=0}^k \beta_{3i} \Delta INF_{t-1} + \beta_4 RGDP_{t-1} + \beta_5 UNP_{t-1} + \beta_6 INF_{t-1} + \mu_t \dots \dots \dots (3)$$

Where Δ is the first difference operator, β_{1i} , β_{2i} and β_{3i} are the short-run dynamics of the model, β_4 , β_5 and β_6 are the long-run dynamics, k is the number of optimal lag length that is relevant to each of explanatory variables and would be determined either by Akaike (AIC) criteria.

The short-term dynamic also known as the Error Correction Model (ECM) for estimating the impact of unemployment and inflation in Nigeria is given as follows:

$$\Delta RGDP_t = \alpha_0 + \sum_{i=0}^k \alpha_1 \Delta RGDP_{t-1} + \sum_{i=0}^k \alpha_2 \Delta \theta_{t-1} + \sum_{i=0}^k \alpha_3 ECM_{t-1} + \varepsilon_t \dots \dots \dots (4)$$

Results and Discussions

Time series data exhibits trend. Time is deterministic and developed what is called momentum. This momentum is what causes noise in time series. The idea of unit root is to tackle the noise and to determine the behaviour of the data set. This result is summarized in table 1.

Unit Root Test

Table 1 shows the summary of the unit root test results. Both the ADF and PP tests show that there is a mixed order of integration of the series. LGDP and UNP are I(1) while INF is I(0). This implies that there could be long-run relationship among the variables. Due to the mixed order of integration, the suitable technique for estimation is the Autoregressive Distributed Lag (ARDL) bound co-integration.

Table 1: Summary of Unit Root Test Results

Variable	Augmented Dickey Fuller (ADF)		Philips Perron (PP)	
	Level	First Difference	Level	First Difference
LRGDP	2.2279	-6.4849*	-0.0981	-6.4849*
UNP	-0.1064	-5.1447*	-0.4210	-5.1407*
INF	-3.7240**	-	-3.0003***	-

Note: *** and ** represents statistical significance at 1%, 5% and 10% levels respectively

Co-integration Test

Table 2 shows the ARDL bound co-integration test result. The null hypothesis that there is no long-run relationship among variables has been rejected. Therefore, a long-run relationship exists between RGDP, UNP and INF. This is true because the F-statistic is greater than 1 percent upper bound, that is, $7.21967 > 5$.

Table 2: F-Bounds Test

Null Hypothesis: No levels relationship				
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	7.219467	10%	2.63	3.35
k	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

Table 3 presents the summary of the long-run estimates. It can be deduced from the table that a negative relationship exists between RGDP, UNP and INF. This relationship is statistically significant at 1% and 5% levels respectively.

Table 3: Summary of Long-run Estimates

Variables	Coefficients	Std. Error	t-Statistic	Probability
UNP	-0.518	0.1486	-3.4865	0.0006
INF	-0.4661	0.1918	-2.4300	0.0143

Table 4 presents the short-run estimates or the error correction results. From the table, both UNP and INF are negatively related with RGDP in the short-run. This relationship is statistically significant at 1% and 5% levels of significance respectively. The co-integrating equation or the error correction mechanism has the right sign (negative) and it is statistically significant at 1% level. This implies that the error committed in the present year will be corrected in the subsequent year. The coefficient of -0.71% signifies a high speed of adjustment back to equilibrium. This it will take the speed of 71% to revert back to the long-run equilibrium.

Table 4: Short-run Estimates

Variables	Coefficients	Std. Error	t-Statistic	Probability
D(UNP(-3))	-0.4075	0.0832	-4.8978	0.0067
DINF	-0.6573	0.0521	-12.6161	0.0000
ECM(-1)	-0.7101	0.0887	-8.0056	0.0000

The findings of this study both for the short and long-run are in line with the apriori expectations. We expect that a rise unemployment and consumer price index should have a decreasing impact on the real output growth (RGDP). The relationship between unemployment and economic growth is the confirmation of the Okun's law. This study contradicts the findings of Adekeju and Olanipeun (2014), Ademola and Badiru (2016). This could be attributable to the high cost of production in Nigeria (cost push inflation). More so, the rate of unemployment in Nigeria at the moment is alarming which could also be a contributing factor. It could also be attributed to the use of different technique of analysis, time period considered for the different studies or the data collection process and management. So many economic transformations have taken place during these periods which might have different impacts on the data or outcomes.

Robustness Checks

Table 5 presents the Breusch-Godfrey serial correlation LM test. This is the test for the presence or otherwise of autocorrelation. From the result, it is evident that there is absence of serial correlation in the model. This implies that the model does not suffer from autocorrelation.

Table 5: Test for Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.083118	Prob. F(2,25)	0.3539
Obs*R-squared	2.870640	Prob. Chi-Square(2)	0.2380

Table 6 represents the test for the presence or otherwise of heteroskedasticity in the model. From the result, it is evident that there is absence of heteroskedasticity in the model. This implies that the model does not suffer from heteroskedasticity.

Table 6: ARCH Test

F-statistic	0.055450	Prob. F(1,33)	0.8153
Obs*R-squared	0.058712	Prob. Chi-Square(1)	0.8085

Table 7 represents the test for misspecification error. From the result, it is evident that the model does not suffer from misspecification error. This implies that the model is well specified.

Table 7: Ramsey RESET Test

	Value	df	Probability
t-statistic	1.469145	26	0.1538
F-statistic	2.158388	(1, 26)	0.1538

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.674168	1	0.674168
Restricted SSR	8.795214	27	0.325749
Unrestricted SSR	8.121046	26	0.312348

Model Stability Test

Figure 1: Cumulative Sum Plot

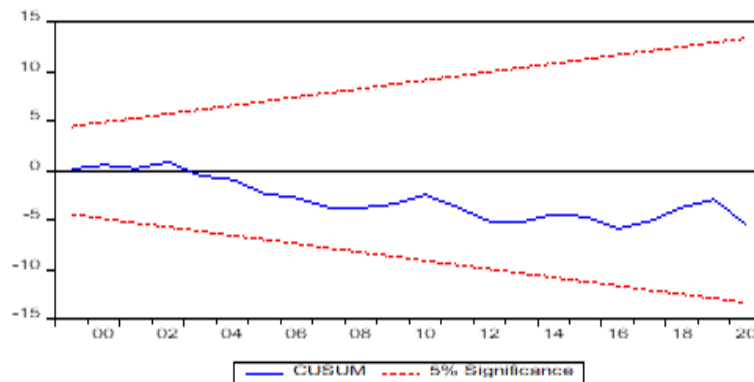
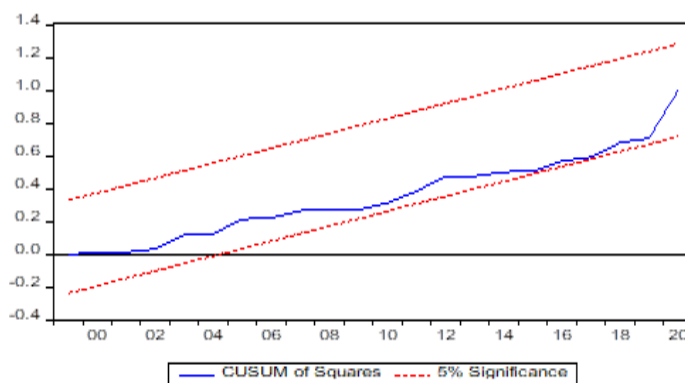


Figure 2: Cumulative Sum Square Plot



From figures 1 and 2, the Cumulative Sum (CUSUM) and the Cumulative Sum Square (CUSUM SQ) lies within the 5% significance level, which implies that the coefficients in the model are stable.

Conclusion and Recommendations

This paper examined the nexus between unemployment, inflation and economic growth in Nigeria from 1981 to 2020. A good number of literatures were reviewed in order to have an insight and to contribute in the ongoing debate in the area. This paper finds the following:

There is a long-run negative relationship between unemployment and economic growth in Nigeria over the period of study. There is a long-run negative relationship between inflation and economic growth in Nigeria over the period of study. All these findings contradicts the findings of Adekeju and Olanipeun (2014), Ademola and Badiru (2016).

Based on the above findings, this paper recommended that the government of Nigeria should spend more money on training and skill acquisition in order to combat unemployment. More so, excessive and galloping rise on the prices of goods and services in Nigeria should be control.

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