INFLATION AND UNEMPLOYMENT IN NIGERIA: DOES THE PHILIPS CURVE HOLD? AN ARDL BOUND APPROACH.

Salisu Baba Manu[1], Chindo Sulaiman, Yahaya Yakubu, and Bello Isma'eel Usman

Department of Economics, Faculty of Social and Management sciences, Bauchi State University, Nigeria

[1]Email Address: sbmmisau@gmail.com

ABSTRACT

This study examines the relationship between inflation and unemployment within the context of Nigerian economy from 1961-2015. The study focuses on examining the existence and applicability of Philips curve theory or otherwise in Nigeria during the period understudy. The study applied augmented Dickey-Fuller and Philip Perron technique to examine the unit root property of the data. ARDL-bound testing approach was conducted to examine both long- and short-run relationship between inflation and unemployment in Nigeria. The result from bound testing reveals that there exist a long-run relationship between inflation and unemployment in Nigeria. The estimated long-run model reveals that there exist a positive and insignificant relationship between inflation and unemployment in Nigeria. That is to say that inflation has no significant impact on unemployment in Nigeria. This is contrary to the Philips curve theory, which postulates the trade-off between inflation and unemployment. Therefore, based on the empirical result, Philips curve theory or hypothesis does not hold or exists in the Nigerian economy. We therefore recommend the policy makers in Nigeria to embark on stabilization policies which aimed at checking or minimizing the rates of inflation and unemployment concurrently.

**KEYWORDS:** Inflation; Unemployment; ARDL approach

1. INTRODUCTION

One major goals of any economy is to maximize employment (full employment) and minimizes price fluctuations (i.e. inflation) in the economy. The attainment of these macroeconomic goals can be achieved, through the provision of employment opportunities to the teeming population (particularly youth) as well as the efficiency in the stabilization mechanisms. Attainment of these macroeconomic objectives has remained an issue that continues to receive attention in developing countries; particularly those of Sub-Sahara Africa Nigeria inclusive, where high level of inflation co-exist with increasing unemployment rate, (Olubaduwe, 2009).

The history and trend of inflation and unemployment in Nigerian economy can simply be traced back to the military regime when the situation was more severe. Despite the fact that militaries have relatively succeeded in maintaining lower inflation level in the country, however the unemployment was very high, and (Olubaduwe 2009). Between 1996 and 1998 unemployment rate was seriously high, together with a rising inflationary rate in Nigeria. Figure 1.0 illustrates the nature and trend of

fluctuations of inflation and unemployment in Nigeria. However with the emergence of democracy in the country in the year 1999 the rate of both inflation and unemployment has fallen down to almost two digits. The inflation and unemployment rates in Nigeria as at the 2nd quarter of 2015 were at two digits (CBN, statistical bulletin 2015).

Figure 1.0 free democracy inflation and unemployment trend in Nigeria (1979-2009).
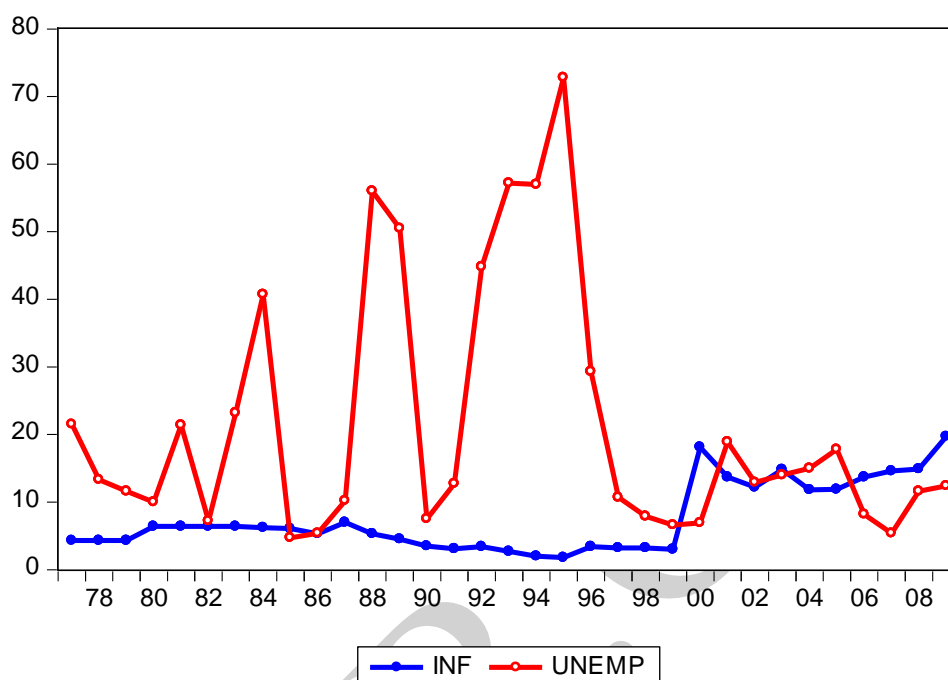
Source: plotted from Data on inflation & unemployment in Nigeria (1979-2009).

This study focuses on the Nigerian economy as an area of study, the choice of Nigerian economy was motivated by the fact that peoples are complaining about the continuous non reverse upward movement in the price of many essential commodities such as food items, medicinal facilities and the rest. On the other hand many people particularly the youth were crying for not having job to do. That is there is existence of rising prices as well as having no enough jobs to do which is contrary to the economic theory. The economic theory popularly known as Philips curve theory postulates a trade off or an inverse relationship between inflation and unemployment.

The study aimed at empirically investigating both the short run and long run relationship between these two macroeconomic variables of inflation and unemployment in Nigeria within the period understudy, and also examines the existence or validity of Philips curve theory/hypothesis in Nigerian economy. Several empirical researches were conducted in various economies across the world to investigate the nature of the relationship between the inflation and unemployment, see DritsakiC. &Dritsaki M. (2012), and Bill R &Anindtya B. (2008).The relationship between inflation and unemployment has since been the concern of economist, policy makers as well as various governmental and non-governmental agencies. Each of these macroeconomic concepts has serious negative and endemic effects on the individuals as well as the progress of the economy. One of the significance of this study is the fact that; it employs the ARDL bound testing method of analysis which was not applied to the Nigerian case to study the relationship between inflation and unemployment by the previous studies thus so far the previous researches employed other method of

analyzing the relationship between inflation and unemployment in Nigeria as in the work of Aminu and Anono (2012). One of the superiority or advantage of using ARDL over other techniques previously applied is that it can be use to determine both short run and long run relationship between inflation and unemployment.

2. Literature review

There are voluminous literatures on the issues concerning inflation and unemployment. These two concepts or macroeconomic variables are very old phenomenon existing in the human society. According to some economist such as Lucas and Phelps (1976), there can never be an economy to exist with zero inflation and unemployment rates, these rates can only be minimized to the minimum acceptable level in an economy. The study categorized the literatures in to theoretical and empirical. Starting with the theoretical review of the variables we can traced back to the 1950s from the work of Phelps and co. The excess demand theories under expectations augmented Phillips curve as well as the Cost Push theories which are currently known as Structuralist or Institutional theories of inflation were revised. In addition several theoretical views of unemployment by various schools of thought are highlighted in this section of the work.

2.1 Empirical Reviews

Anono.A& Umar. A (2012) examined the relationship between inflation and unemployment in Nigeria between 1975 and 2009 using OLS method and discovered that a negative relationship exist between unemployment and inflation. Causality test revealed the absence of causal relationship between unemployment and inflation in Nigeria for the period under study. King and Watson (2000) checked the existence of Philips curve using time series data for USA, and found a negative relationship between unemployment and inflation, also no causality was found between these two variables. Furuoka (2006) investigate a long run and causal relationship between unemployment and inflation rates in Malaysia during the period 1975 and 2004. Result shows that there exists a long run negative relationship between inflation and unemployment in Malaysia. Islam et al examined Philips hypothesis for USA data (1950-1999), and found a weak long run co integrating relationship between unemployment and inflation. Reichel, (2000) applied co integration technique on Philips hypothesis for some industrialize states, and found a trade-off between unemployment and inflation, experience of US and Japan. Tejvan (2011) examined the nature relationship that exists between inflation and unemployment using a cross-country data from United State and United Kingdom (US&UK). He found that there exist some trade-off between unemployment and inflation in both countries. To him in UK from 1979 to 1983 inflation (CPI) decline from 15% to 2.5%. This period witnessed an increase or rise in unemployment rate from 5% to 11%. He also cite that in 2008 inflation rate decline from 5% to 2%, and during that period he observed a sharp increase in unemployment rate from 5% to over 10%. He concludes that there exists a tradeoff between unemployment and inflation in both US and UK for the period under study, and no causality was found between unemployment and inflation from both countries. Buhari (2002) undertake a cross-city studies he use data from six most populated cities in Nigeria namely Kano, Lagos, Ibadan etc. He found the negative trade-off between unemployment and inflation in all these cities. This validates the Philips hypothesis in these cities. Badamasi (2000) undertake a cross-country study. He use panel data from four African countries namely Nigeria, Niger republic, Togo and Sierra Leone. He concludes that in three out of four countries there exist a negative relationship between unemployment and inflation. While from one nation namely Sierra Leone, there exist a negative

relationship between unemployment and inflation, followed by a unidirectional causality from inflation to unemployment. The possible reason for the existence of causality between unemployment and inflation was that, because he uses inflation percentage instead of inflationary rate which if were used there may be no causation between these two variables. A.Fagge (2011) examined the relationship between unemployment and inflation in Nigeria for the period 1965-2009. He found that there exist a negative relationship between unemployment and inflation. Adopting Johansen technique, the result of co integration test revealed a long run co integrating relationship between these two variables in Nigeria during the period of study. No causal relationship was discovered between unemployment and inflation. Dritsaki C. &Dritsaki M (2012) examined the Philips curve hypothesis in Greece. They found that there exist is a long run and causal relationship between unemployment and inflation in Greece for the period under study. In their study Lin Chang and Hwang Yhu (2005) examined the existence of the Philips curve in China. They have discovered the existence of negative relationship between unemployment and inflation exist. Long run and causal relationship between unemployment and inflation also exist in Chinese economy. Balarabe (2000) examined the validity of the Philips curve hypothesis in Kenya for the period 1970-2009. He discovered the negative relationship between unemployment and inflation in Kenya using co integration technique, however unidirectional causality from inflation to unemployment was discovered in Kenya as revealed by the causality test. Husnah et al (2007) examined a negative relationship between unemployment and inflation in Indonesia during 1970-2005. The study concludes that inflation and unemployment are negatively related in the experience of Indonesian economy. However bidirectional causality between unemployment and inflation was discovered. Since the case is different from most of the inflation-unemployment literatures, policy makers should initiate measures that will prevent the increase of one of these variables, which may consequently discourage the increase in the other variable.

Adeji and Song (2000) discovered that the existence of negative relationship between unemployment and inflation in Cameroon. Their study confirms the validity of the Philips hypothesis in Cameroon. And there is no any causal relationship between unemployment and inflation during the period of their study. Maria Karanassou et al (2004) in their cross-sectional study among OECD nations, they examined the trade-off between inflation and unemployment. They discovered that there exist a negative but weak relationship between unemployment and inflation among these countries. The empirical evidence suggest that the Philips curve may be reasonably flat, this show that the persistence of inflation and unemployment in response to monetary policy shocks is related to the slope of the long-run Philips curve. Based on their empirical analysis, three of the result suggests that the movement of inflation and unemployment does not have a single blade or sharp property. That is to say evidence from OECD failed to support the view that; inflation keep falling unlimitedly when the unemployment rate is above the NAIRU level. In addition the empirical analysis also shows that, money growth can have gradual effects on inflation. Monetary shocks usually have a faster effect on unemployment. Based on this analysis we may say that monetary policy can play a vital and role in the real economy than, other theories allows for.

Adalfosachisda et al (2010) in their study in united state to examine the relationship between inflation and unemployment, they divide the sample series in to three, based on three different chairmanship of FED in united state. They find a long run relationship between inflation and unemployment in the united state during the period of their study. And no any causality between

inflation and unemployment was found during that period. Under each regime of different chairmen of FED, the relationship between unemployment and inflation remain unchanged in united state. Bukhard Heer (2003) in his study uses a monetary general model with labour market friction in the form of search employment, which is calibrated for united state economy. He discovered that in the united state's economy, both employment and output may even increase with the rate of inflation. This result challenged the general proposition that, higher rate of inflation reduces both output, employment as well as the general welfare of the peoples unanimously. This finding suggests that lower inflationary rate reduce employment and output level in the united state's economy. Dennis J. Snower et al (2007) in their study examine the validity as well as the existence of the Philips curve in Spaniard economy. They looked at the interaction between money growth and nominal frictions. They have found that the NAIRU theory does not exist, and different long-run inflation rates are associated with unemployment rates. In a nut shell, in the case of Spaniard economy, monetary policy may have greater effectiveness and long-lasting effects on the real economic activities, and on unemployment in particular than the conventional wisdom allows for. Guy Carrin and Anton P. Barten (1975) examine whether there exist a trade-off between inflation and unemployment in Belgium, in both short and long run in the Belgian economy. Empirical evidence suggests that; both long and short run relationship exist between inflation and unemployment in the Belgian economy. However some studies found or discovered contrary result to the philps curve theory/hypothesis where the discovered a positive relationship between inflation and unemployment in some countries, such as in the work of Alfred A. and Ian P. (2011), examine the long run inflation-unemployment nexus, using a quarterly data of united state between 1952 and 2010. They have found a positive relationship between inflation and unemployment in the united state. This outcome is in accordance with the Friedman's and the new monetarist that, the relationship existing between inflation and unemployment is positive in the long run.

Bill Russell and Anindya B. (2007), discovered small but positive significant relationship between inflation and unemployment in Russia. The result or finding confirmed the existence of Philips hypotheses in the context of Russian economy during the period under study. Marc D. Hayford (2004) discovered that there is a positive correlation between unemployment uncertainty and inflation uncertainty. Thus unemployment uncertainty are positively correlated with inflation, that inflation granger cause unemployment uncertainty, and that shock to inflation uncertainty have similar effect on real GDP growth. Young (2007) conclude that inflation and unemployment are independent of each other in the case of Taiwanese economy during 1978-1999 as revealed by causality test. And long run but weak negative relationship exist between unemployment and inflation in Taiwanese economy for the period under study. Adebayo (1990) examined the validity and the existence of Philips hypothesis in Ghana for the period 1975 and 1989. He found a positive relationship between unemployment and inflation in Ghana. The sign of the regression coefficient was found to be positive and insignificant. Causality result revealed absence of causation between unemployment and inflation. Therefore Ghana's situation was said to be counter Philips hypothesis. However it is consistent and in conformity with the Milton Friedman's view, that in the long run there will be positive relationship between unemployment and inflation. Therefore we may conclude Ghana's situation as stagflation.

3.0 Theoretical framework and methodology

The theoretical framework for this study is based on the Philips curve theory which was developed

by late A.W. Philips in 1950s using the empirical data from United States and United Kingdom. The Philips curve theory postulates that there is an inverse relationship between inflation and unemployment. Meaning that when there is an increase in inflationary rate in the economy, unemployment rate on the other hand will fall down and vice-versa. The argument is that whenever there is inflation in a country economic activities increases, because producers may be willing to produce more output in order to make higher revenue and consequently higher profit. For the producers to produce additional output they must employ additional workers on the existing number, and hence the level of unemployment will fall down. Conversely when there is fall down in economic activities or law demand producers have to restructure the size of their workers by reducing their number and hence the level of unemployment will increase in the economy. See figure 2.0 above for the graphical illustration of a typical Philips curve.

3.1 Methodology

This study used annual time series data for 35 observations which are sufficient for time series analysis Yakubu et al (2015). Data on inflation and unemployment in Nigeria from 1980-2009 were sourced from CBN Bulletin 2010, while from 2010-2015 from CBN Bulletin of 2017. This is due to inconsistency in data flow in many of the developing economies Yakubu et al (2015)

This study employs Autoregressive Distributed Lag (ARDL) approach to co integration profounded by Pesaran (1997) and further modified and redeveloped by Pesaran, Shin and Smith (1999, 2000) and also by Narayan (2005). This study adopted ARDL approach because of its comparative superiority over other approaches to cointegration this is because they require variables to be cointegrated at first difference, I (1). However ARDL was developed to accommodate such circumstance. It can be used to analyses the data even if they are at different order of integration. Additionally it can also determine both the short run and long run cointegration among the variables of study.

3.2 Model specification

It should be noted that this study involve a bi-variate analysis, that is involved only two variables namely inflation and unemployment. Since this study is trying to examine the existence of the Philips curve within the context of Nigerian economy during the period under study or otherwise, we have to limit the number of variables to inflation and unemployment only, otherwise adding any variable may influence the result and hence contradict the theory. To analyze this we follow the method of Phelps (1956), and Dritsaki C &Dritsaki M (2012), where only inflation and unemployment were incorporated in the model, such that unemployment as a dependent while inflation as independent variable.

3.3ARDL Bounds Test for Co integrations

$$\Delta y_t = \alpha_0 + \sum_{i=0}^{p} b_i \Delta y_{t-i} + \sum_{i=0}^{p} c_i \Delta x_{t-i} + \sum_{i=0}^{p} d_i \Delta z_{t-i} + \delta_1 y_{t-1} + \delta_2 x_{t-1} + \delta_3 z_{t-1} + \delta_4 + \mu_t$$

The optimum lag is chosen by Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC). For small sample, compare the F-statistics with the critical bounds by Narayan (2005) for large sample Pesaran et al (2001).

Estimation of Long run Coefficients

$$y_t = \alpha_0 + \sum_{i=1}^{p} b_i \, y_{t-i} + \sum_{i=0}^{p} c_i x_{t-i} + \sum_{i=0}^{p} d_i z_{t-i} + \mu_t$$

To conclude the long run co-efficient, we use the Wald co-efficient test;

Estimation of Short-run Coefficients

$$\Delta y_t = \alpha_0 + \sum_{i=0}^{p} b_i \Delta y_{t-i} + \sum_{i=0}^{p} c_i \Delta x_{t-i} + \sum_{i=0}^{p} d_i \Delta z_{t-i} + \gamma ECT_{t-1} + \mu_t$$

γ is the adjustment coefficient. The following ARDL model is provided to test the relationship between unemployment and inflation. The model is specified in three parts. The first is the co-integration model; long run model and the short run model.

ARDL Co integration model

To test for co integration between the variables of the model equation below is specified and estimated using ARDL bound test for co integration as adopted by Chaido and Melina (2012). The model was specified together with null and alternative hypothesis which may be rejected or failed to reject it. This stand as a turning point when the null hypothesis of no co integration between variables of the model is failed to be rejected, then try another method such as VECM and others. If co integration exists by rejecting null hypothesis we proceed to estimate short run and long run coefficients. Thus, the specified model for co integration is as follows:

$$\Delta \ln UEMP_t = \alpha_0 + \sum_{i=1}^{k} a_{1i} \Delta \ln UNEMP_{t-i} + \sum_{i=0}^{k} b_1 \Delta \ln INF_{t-i} + \Omega_1 \ln UNEMP_{t-1}$$
$$+ \Omega_2 \ln INF_{t-1} + \mu_t$$

$$H_0 : \Omega_1 = \Omega_2 = 0 \text{ (No co integration)}$$
$$H_a : \Omega_1 \neq \Omega_2 \neq 0 \text{ (Co integration exists)}$$

ARDL long run model

Having existed co integration between the variables of the model we can proceed to estimate the long run coefficients. To estimate long run coefficients, equation below is specified and estimated to obtain the coefficients of long run.

$$\ln UEMP_t = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} \ln UNEMP_{t-i} + \sum_{i=0}^{k} \alpha_{2i} \ln INF_{t-i} + \varepsilon_t$$

ARDL short run & error correction model:

To estimate the short run coefficients and error correction term which measure the speed of adjustment or convergence the following equation was specified and estimated.

$$\Delta \ln UEMP_t = \alpha_0 + \sum_{i=1}^{k} a_{1i} \Delta \ln UNEMP_{t-i} + \sum_{i=0}^{k} b_1 \Delta \ln INF_{t-i} + \gamma ECT_{t-1} + U_t$$

Results and Discussion

To begin the estimation, we first check the stationarity of the variables. To check for the stationarity of the variables, a number of approaches can be applied. This study employed two methods or techniques of checking the stationarity of the variables. These are augmented Dickey-Fuller (ADF), and Philips-Perron (PP) tests. These tests have been used in huge number of studies such as: Ouattara (2004), Ibrahim, Padli and Baharom (2009), Kakar, Kakar and Khan (2010), Chigusiwa et al.(2011), and Aminu (2012). Both the tests revealed that lnUNEMP has a unit root or is not stationary at level, but becomes stationary at first difference, which implies that,lnUNEMP is I (1). On the other hand, lnINFL is found to be significant at level which qualifies it as an I(0) variable. The unit root results therefore suggest a mix outcome and as such ARDL approach can be considered as the best method for this study since the two variables were found to be integrated of different order as supported by Narayan (2005).

Next, we test the cointegration relationship among the variables of interest. One of the advantages of ARDL approach is that it can be used to check for cointegration even if the order of integration among the variables is a mixture of I(0) and I(1), as obtained in this study. Table 2 presents the co-integration test result and it reveals that; long run relationship exists between the variables of the model. The result illustrates that the computed F-statistics is 9.004 and that it exceeds the relevant critical upper bound value at 1% level of significance (Case III, unrestricted intercept and no trend).The critical bound values are6.84 and 7.84 for the lower and upper bounds, respectively. This outcome is consistent with Aminu and Anono (2012) who have found similar cointegrating relationship between inflation and unemployment in Nigeria. The result is also similar with the result obtained by Chaido and Dritsaki (2012), within the context of the economy of Greece. Several studies on different countries have found that inflation and unemployment are cointegrated in the long run although most of such studies adopted the Johansen cointegration technique.

Table 2. Bounds test results

Model	F-stats.	Lag	Level of Sig.	Bounds test critical values [Unrestricted intercept & no trend]	
				I(0)	I(1)
				1961-2016	
$F(lnUNEMP_t/lnINFL_t,)$	9.004	3	**1%**	**6.84**	**7.84**
			5%	4.94	5.73
$n=51$			10%	4.04	4.78

The critical bound values are obtained from Narayan (2005) table case III. The black boldness show

the significance level and bounds at which co-integration existed.

Having established the presence of a long-run association between Unemployment and Inflation, the model can then be used to estimate long-run and short-run parameters or coefficients.Table 3 displays the long-run results of the relationship between unemployment and inflation based on Schwartz Bayesian criterion (SBC) selection. The results show a positive and insignificant relationship between the variables of study, i.e., inflation and unemployment. This finding is contrary to Philips curve theory which postulates that there is a trade-off or an inverse relationship between inflation and unemployment. The result revealed that the relationship between unemployment and inflation in the long-run is not significantlynegative in Nigeria as theorized. The result further suggests that unemployment is not significantly influenced by inflation in Nigerian context. The finding contradicts Oladifo (2009) in South-Africa where a negetive and significant relationship exist between these variables; also the result is in disagreement with the result of Aminu and Anono (2012).

This may be due to some differences in the economic variables in such countries, which result to the contradiction or disproven the Philips curve hypothesis. However, the finding is consistent with Adebayo (1990)'s finding where a positive and insignificant relationship between unemployment and inflation was found in Ghana. Equally, Young (2007) found that inflation and unemployment were independent of each other in the case of Taiwanese economy.

Table 3. Estimated long run coefficients based on Schwarz Bayesian criterion (SBC)

Dependent Variable, $lnUNEMP_t$: Regressors	Coefficients	T-Statistics [p-value]
$lnINFL_t$	0.083	1.146 [0.257]
Constant	0.565***	8.048 [0.000]

Note: ***, ** and * are significant at 1%, 5% and 10% levels, respectively.

Table 4 shows the estimated ARDL short-run and error correction coefficients. The results illustrate that the error correction term (ECMt-1) is negative, significant and less than one as suggested by the theory, showing that the feedback or convergence rate to long-run equilibrium as 33.7%.The error correction term value also indicates that the long-run deviation from the rate of unemployment is corrected by 33.7% annually. The results equally show that there is an insignificant relationship between unemployment and inflation in the short-run, corroborating the long-run results.

Table 4. The estimated short-run coefficients based on Schwarz Bayesian Criterion (SBC)

Dependent Variable, $\Delta lnUNEMP_t$: Regressors	Coefficients	T-Ratio [p-value]
$\Delta lnUNEMP_{t-1}$	0.508***	4.048

		[0.000]
ΔlnINFL$_t$	0.028	1.136 [0.261]
ECM(-1)	-0.337***	-4.140 [0.000]
ecm = lnUNEMP–(0.083×lnINFL+1.565×Constant		

Note: ***, ** and * are significant at 1%, 5% and 10% levels respectively.

The diagnostic tests' results are reported in Table 5, which reveal that the model passed the autocorrelation, functional form, normality, and heteroskedasticity tests. In other words, the model is correctly specified with no serial correlation and heteroskedasticity, and the error is normally distributed. In addition, Figures1 and 2 show stability tests using CUSUM and CUSUM of squares. From these figures, it is observable that the plots of both CUSUM and CUSUM square are within 5% of critical bounds. This implies that the estimated model is stable. Having passed most of these tests, it is clear that this model can produce robust and reliable results.

Table 5. The results of the ARDL Diagnostic tests.

Test statistics	LM Version	F-version
A: Serial correlation	CHSQ (2) = 0.357 [0.836]	F (2, 45) = 0.159 [0.853]
B: Functional form	CHSQ (1) = 1.163 [0.250]	F(1, 46) = 1.354 [0.250]
C: Normality	CHSQ (2) = 4.434 [0.108]	Not applicable
D: Heteroskedasticity	CHSQ (3) = 2.054 [0.561]	F (3, 47) = 0.657 [0.582]

Note: ***, **, and * are significant at 1%, 5% and 10% levels, respectively.

A: Langrange multiplier test of residual serial correlation.
B: Ramsey's RESET test using the square of the fitted values.
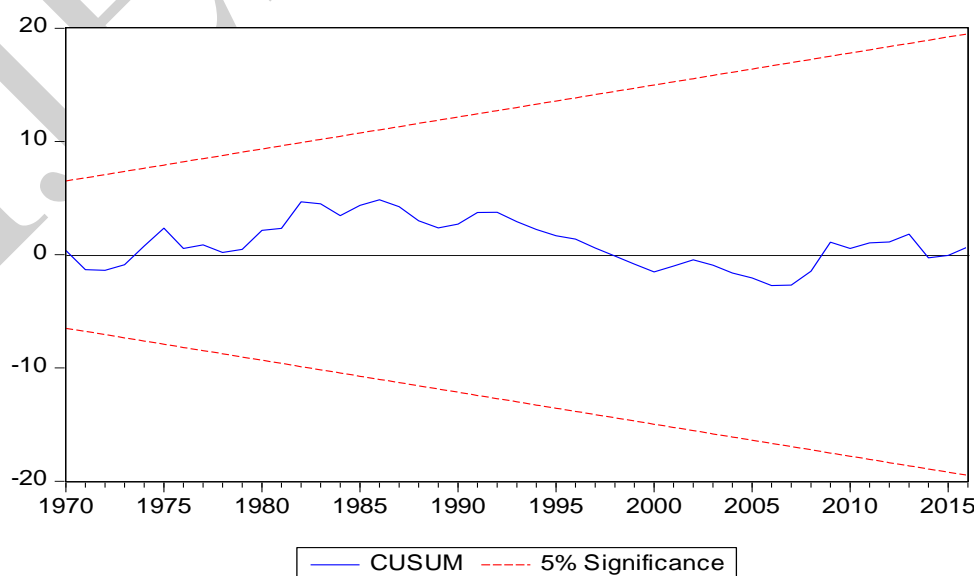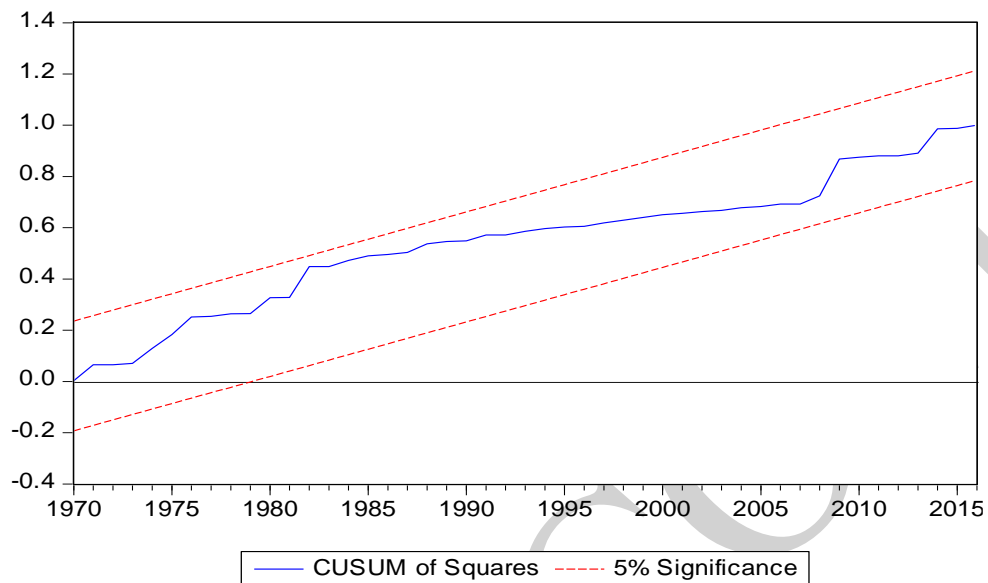C: Based on Jarque-Bera.
D: Based on the Breusch-Pagan-Godfrey.

Figure 1.Plot of cumulative sum of recursive residuals.

CONCLUSION

The aim of this study is to examine whether or not the Philips curve theory exist in the Nigerian economy, and to examine the short-and long-run relationships between inflation and unemployment in Nigeria. Based on the empirical result obtained we may conclude that; there exist a positive and insignificant relationship between inflation and unemployment in Nigeria in both short-and long-run. This refutes the Philips curve theory which postulates negative relationship (or trade-off) between these two macroeconomic variables. Based on this fact we can say that Philips curve theory (hypothesis) is nonexistent in Nigeria during the period between 1961 and 2015. This finding answered the major objective of this study, that is, by checking the existence or otherwise of a negative relationship between inflation and unemployment as suggested by Philips hypothesis.

The policy recommendation from this study is that, since both inflation and unemployment are macroeconomic problems, the policy makers should embark on various stabilization policies that aimed at checking, tackling and or minimizing their rates simultaneously.

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