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The Relationship between Inflation and Unemployment in Nigeria: Evidence from Time Series Analysis

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Abstract—*I have examined the relationship between inflation and unemployment in Nigeria, from 1961 – 2010, using ARDL model, the estimated equation using OLS reveals a positive relationship, signifying stagflation, Dicky fuller GLS and KPSS unit root test is used for stationarity test, Johansen cointegration test is used to find the number of cointegrated equations in the model, it shows one cointegrated equation, Granger causality test is used to find the direction of causal relationship between the variables, and Wald test is used to find the longrun relationship, which reveals no long relationship between the variables, based on the findings, it is therefore recommended on CBN to focus on measures that will reduced the rate of inflation in the economy.*

1. INTRODUCTION

The objective of a macroeconomic policy is to achieve a stable economic growth, through low level of unemployment and inflation.

Nigeria, like any other developing economy wants to achieve high level of employment and low level and inflation, Nigeria's current macroecomic policy is geared towards stability in prices, and reduction in unemployment, while this may be the case the situation in the labour market is quite different, everyday Nigerian universities, polytechnics and colleges produced well equipped and able graduates whom constitute the labour force, but unfortunate very few can find job in the immediate period. Unemployment is an impediment of economic growth, even though nowadays economies are growing at a high rate of growth and high level of employment, this kind of growth is termed by economist as jobless growth.

The relationship between inflation and unemployment have been a subject of argument among various economist, this is not something new, it was a key component of the monetary doctrines of David Hume (1752) and Henry Thornton (1802), it was statistically stated by Irving fisher (1926), although he view it as causation running from inflation to unemployment rather than vice versa. It was stated in an econometric model form by John Tinberjen (1936) followed by Lawrence Klein and Arthur Goldberger (1955), it was finally graph on a scatterplot chart by A.J Brown (1955) and presented in the form of diagrammatic curve by Paul Sultan (1957). Despite the early efforts, Philips curve does not come to existence until in 1958, in a publication by professor A.W Philips in the equation w=f(u), i.e. money wages is a function of unemployment, he uses the data of united kingdom of 1861 – 1913, and depicts an inverse relationship in the short run. Freidman (1968) invented the natural rate of unemployment (NAIRU), where he depicts that the Philips curve is absolutely vertical in the longrun, i.e unemployment rate is independent of inflation.

2. INFLATION AND UNEMPLOYMENT: NIGERIAN PERSPECTIVE

According to the central bank of Nigeria (CBN) inflation rate is 8.3 percent (sept,2014), which signifies a single digit inflation, Unemployment Rate in Nigeria increased to 23.90 percent in 2011 from 21.10 percent in 2010. Unemployment Rate in Nigeria averaged 14.60 Percent from 2006 until 2011, reaching an all-time high of 23.90 Percent in 2011 and a record low of 5.30 Percent in 2006. Unemployment Rate in Nigeria is reported by the National Bureau of Statistics, Nigeria. According to a financial derivatives company limited (a company base in Lagos) the rate of unemployment is expected to increase further by 2 percent.

This tremendous increase in the rate of unemployment is due to the Dutch disease, the overdependence on capital intensive oil sector, which provides 28 percent of GDP and 95 percent of foreign exchange earnings and about 65 percent of government revenues. According to CIA world fact book, 2013 13.9 million people are jobless in Nigeria, and in an analysis by 43.7 percent are university graduates, 2.8 percent from polytechnic, 15.5 percent from colleges (CBN 2012b).

3. LITERATURE REVIEW

There is a little contribution towards measuring the relationship between inflation and unemployment in Nigeria, but the ones i come across are as follows:

According to Abachi and Phillips (1998) they found that there is an inverse relationship between inflation and unemployment, using a model developed by Rea (1983), who found that there is no trade-off, his findings showed that causality exist between inflation and unemployment.

Onwioduokot (2006) found inverse relationship between inflation and unemployment in Nigeria, with the coefficient -0.412.

Aminu and Anono (2012), using ADF technique revealed that there is no causation between inflation and unemployment and that a long term relationship exists between the two, and it reveals an inverse relationship between the variables.

Others that invalidate the inverse relationship in Nigeria include: Umaru and Zubairu (2012), Umoru and Ayiwe(2013) and Taiwo and Folorunso (2013)

4. THEORETICAL FRAMEWORK AND MODEL SPECIFICATION

The relationship between inflation and unemployment is explained by the Philips curve, the transmission mechanism of inflation and unemployment tradeoff of monetary policy can be given below:

An expansionary monetary policy increase the money supply, and thereby decreasing the interest rate, by decreasing interest rate it will distract speculators from saving, meaning saving will decrease, the money that will have been used for saving will now be used for consumption thereby in increasing consumption (aggregate demand), if aggregate demand increases it will lead to increase in the productive capacity, by increasing the productive capacity, more labour will be required thereby reducing unemployment and the resultant effect will be increase in inflation rate. The reverse will be the case for a contractionary monetary policy. As the economy is approaching a steady state the increase in employment level and aggregate demand will force the inflation and money wage to increase in the shortrun. A contractionary monetary policy will reduced investment and increase unemployment and this will reduced the inflation rate, this will require the intervention of the government in this tradeoff

5. METHODOLOGY

The specification of the model is based on how A.W Philips (1958) specified it i.e. w= f (u), where w is the inflation term and u is the unemployment, the inflation being the dependent variable, the above equation is the equation of interest as per my research work is concern.

Unit Root: since most time series are non-stationary there is the need to check whether the series are stationary or not, two methods are followed:

Dicky fuller GLS (ERS) is used to test for stationarity

Kwiatkowski-Phillips-Schmidt-Shin: where some scholars believe that ADF method of rejecting the null hypothesis is data dependent, KPSS was developed to overcome that, and argue that the hypothesis can be reversed, i.e.H_0 : stationary

ARDL Model:The ARDL / Bounds Testing methodology of Pesaran and Shin (1999) and Pesaran *et al*. (2001) has a number of features that many researchers feel give it some advantages over conventional cointegration testing.

Granger Causality: this is use to find weather series have a causal relationship, i.e. if two series are given, we need to determine which cause which? Or both cause each other.so that we can forecast one series using the other.

The null hypothesis that *x* does not Granger-cause *y* is not rejected if and only if no lagged values of *x* are retained in the regression.

6. FINDINGS

Test for stationarity is shown in appendix two to eleven, inflation being stationary at level, while unemployment at first difference, using both ADF GLS and KPSS, inflation is tested using no trend, and using trend and intercept.

Since the series is a combination of I(0) and I(1), the suitable model is ARDL model, to find the cointegration, as explained in the methodology, (appendix twelve) I found that there is one cointegrating equation, in the equation of interest, this is done by using the critical values at 5% and F-value.This shows the variables have a longrun associonship.

Wald testreveals that there is no longrun relationship among the variables, (refer to appendix thirteen) .having compared the test statistics and the critical values of Pesaran of bound testing.

In all circumstances where I used one, two, and three lags, Granger causality test reveals that there is no causal relationship among the variables.

The estimated equation shows a direct relationship between inflation and unemployment, therefore we can say that Philips curve is not applicable in Nigerian economy. If inflation increases by one percent unemployment will increase by 0.3 percent. This is also an evidence of stagflation in Nigerian economy.

The findings reveal nonexistence of tradeoff between inflation and unemployment in Nigeria, indicatingnonexistence of Phillips curve in Nigeria in the sampling period, the estimated relationship reveals the level of reaction of unemployment if

inflation increases by one percent, meaning that there is high reaction of one third.

7. CONCLUSION

I have examined the relationship between inflation and unemployment in Nigeria over a period of fifty years, and I have found that there is a positive relationship between the variables, which invalidate the presence of Philips curve in the Nigerian economy, but rather a stagflation.

The CBN should focus on measures to reduce the level of inflation in the economy, or should revise the existing policies on inflation targeting.

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