INFLATION AS A DETERRENT TO UNEMPLOYMENT

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ABSTRACT
The research work is centered on unemployment and inflation in Nigeria. Its main objective was to ascertain if the trade-off thesis holds in Nigeria. To achieve this, various data on unemployment and inflation were collected from 1988-2013, also other variables such as government expenditure, interest rates, and the gross domestic product were included. The result of the test revealed that unemployment and inflation are inversely related, thus confirming the existence of the Phillips curve in Nigeria, with inflation having a significant impact on unemployment in Nigeria. The work recommended that; Government should strive to develop the agricultural sector, Massive investments should be carried out in the real sector, free flow of information between employers and employees should be enhanced and that special attention be given to policy implementation.

Keywords: Unemployment, Inflation, development, expenditure, interest rate.

INTRODUCTION
Undoubtedly, parts of the macroeconomic goals which the government strives to achieve are the maintenance of stable domestic price level and full-employment. Macroeconomic performance is judged by three broad measures- unemployment rate, inflation rate, and the growth rate of output (Ugwuanyi, 2004).

Unemployment has been categorized as one of the serious impediments to social progress. Apart from representing an enormous waste of a country’s manpower resources, it generates welfare loss in terms of lower output thereby leading to lower income and well-being (Raheem, 1993). Inflation on the other hand, has been a major problem in the country over the years. Inflation is a household word in many market oriented economies. Although several people, producers, consumers, professionals, non-professionals, trade unionists, workers and the likes, talk frequently about inflation particularly if the situation has assumed a chronic character, yet only selected few know or even bother to know about the mechanics and consequences of inflation.

Unemployment and inflation are issues that are central to both the social and economic life of every country. The existing literature refers to unemployment and inflation as constituting a vicious circle that explains the endemic nature of poverty in developing countries. And it has been argued that continuous improvement in productivity- which brings about the adequate supply of goods and services - is the surest way to breaking the vicious circle.
The Nigerian experience of the crisis of unemployment and inflation was delayed until the early - and mid- 1980s with the collapse of oil prices on which the economy had become dangerously dependent on. Before the 1980s, previous records showed that the Nigerian economy was able to provide jobs for its increasing population, and was able to absorb considerable imported labour in the scientific sectors. The wage rate compared favourably with international standards, the inflation rate was moderate, and there was relative industrial peace in most industry sub-groups.

The oil boom in the 1970s led to the mass migration of youths into the urban area, seeking to get work. However, following the recession experienced in the 1980s, the available data revealed that, the problem of unemployment started to manifest, precipitating the introduction of the Structural Adjustment Programme (SAP), the rapid depreciation of the naira exchange rate and the inability of most industries to import the raw materials required to sustain their output levels.

A major consequence of the rapid depreciation of the naira was the sharp rise in the general price level (inflation), leading to a significant decline in the real wages. The low wages in turn fueled a weakening purchasing power of wage earners and a decline in the aggregate demand. Consequently, industries started to accumulate unintended inventories and, as a rational economic agent, the manufacturing firms started to rationalize their market prices. With the simultaneous rapid expansion in the educational sector, new entrants into the labour market increased beyond absorptive capacity of the economy. Thus, the avowed government’s objective of achieving “full employment” failed.

Statement of the Problem
The problem of inflation in Nigeria was brought about by the oil glut in 1981, which resulted into balance of payment deficits leading to foreign exchange crisis that necessitated various measures of import restrictions. These restrictions reduced raw materials for domestic production and spare parts for machinery operation. The resultant shortage of goods and services for local consumption spurred the inflation rate to rise from 20% in 1981 to 39.1% in 1984 (Itua, 2000).

With the adoption of the Structural Adjustment Programme (SAP) in 1986, there was a temporal reduction in fiscal deficits as government removed subsidies and reduced her involvement in the economy. But as the effects of the Structural Adjustment Programme (SAP) policies gathered momentum, there was a fall in the growth rate of Gross Domestic Product (GDP) in 1990 from 8.3% to 1.2% in 1994, with inflation rising from 7.5% (1990) to 57.0% (1994). In 1995, inflation rate rose to 72.8% due to increased lending rate, the policy of guided deregulation, and the lagged impact of fiscal indiscipline.

The increase in unemployment in Nigeria, on the other hand, has resulted to decrease in consumption, due to low income earned by the citizens, thereby resulting to low production- the inability of firms to sell their goods, forces them to reduce their output. This has led to decrease in the economic growth of the nation.

Unemployment also has social consequences as it increases the rate of crime. Also, being without a job in Nigeria, is as good as losing your self-respect and self-esteem among the people of your age bracket. The proportion of workers who are unemployed shows how well a nation's human resources are used and serves as an index of economic movement (positive or negative).

In 1999, the unemployment rate was 17.5%, while at the end of President Olusegun Obasanjo’s administration in 2007; the rate of unemployment had reduced marginally to 12.7%. From 1999 to 2007, the rate of unemployment averaged at 13.1% – still quite high, since 5% is perceived as the accepted rate. In 2008, the rate of unemployment was almost 14.9% and rose drastically to about 23.9% in 2011. The unemployment rate has been rising from 1980 to 2011. A recent forecast shows that the rate would continue to increase up to the year 2020.

Research Questions
In the light of the foregoing analysis, the research work will be guided by the following question:

1. Is there any trade-off relationship between unemployment and inflation in Nigeria?
2. Does government expenditure have any significant impact on unemployment?
3. Do increases in the gross domestic help reduce unemployment?
Objective of the Study
The primary objective of this study is to examine if there is any trade-off relationship between unemployment and inflation in Nigeria. Other objectives include:

a. To ascertain the impact of government expenditure on unemployment.
b. To examine the impact of gross domestic product on unemployment.

Research Hypothesis
The study will be guided by the following hypothesis:

1. Null hypothesis (H₀): There is no trade-off relationship between unemployment and inflation in Nigeria.
2. Null hypothesis (H₀): Government expenditure has no impact on unemployment in Nigeria.
3. Null hypothesis (H₀): Gross domestic product has no significant impact on unemployment in Nigeria.

Significance of the Study
Why has unemployment and inflation continued to rise despite the substantial increase in the nation’s GDP? Is it that successive governments neglected the issue of unemployment and inflation or has the twin problems defied all economic theories? These are questions that need immediate answers, because unemployment and inflation are current issues that is affecting our country and which is being discussed by both experts and lay-men alike.

Therefore, this study will be of paramount importance to economic decision-makers, as it will equip them with the knowledge and skills needed to tackle the pressing issue of unemployment and inflation in our country. Also, to those who would like to carry out further research on this topic, it would be of valuable help in the course of their research.

REVIEW OF THE RELATED LITERATURE
Theoretical Literature
Theories of Unemployment

(a) The Classical Theory of Unemployment:
The fundamental principle of the classical theory is that the economy is self-regulating. The classicists assume the existence of full employment without inflation. Given wage-price flexibility, there are automatic forces in the economic system that tends to maintain full employment, and produce output at that level.

In the classical model, the equilibrium income and employment are determined largely in the labour market. At lower wage rate more workers will be employed. That is why the demand curve of labour is downward sloping.

The classicists also hold that there is always full employment, so that the existence of unemployed workers is a logical impossibility. Any unemployment which existed at the equilibrium wage rate was due to frictions or restrictive practices in the economy. Thus full employment is regarded by the classicists as a normal situation, while unemployment is abnormal.

(b) Keynesian Theory of Unemployment:
Keynes was given the credit of having demolished the theories of 19th century economists who had taught that, if left to its own devices, capitalism would always and of its own accord tend towards full employment. Keynes taught that the economy could settle in equilibrium at any level of unemployment. This meant that classical policies of non-intervention would not work.

In his theory (Keynes), it states that employment depends on effective demand, effective demand results in output, output creates income, and income provides employment. Thus, he regards employment as a function of income. Also, effective demand depends on the aggregate supply and demand function. Since Keynes assumed that aggregate supply was stable, he concentrated on the aggregate demand to fight depression and unemployment.

According to him, employment can be increased by increasing consumption and/or investment. Consumption depends on income C(Y) and when income rises, consumption also rises but not as much as income.
The Keynesian framework, as examined by Thirlwal (1979), Grill and Zanalta (1995) and Hussain and Nadol (1997), postulate that increase in employment, capital stock and technological change are largely endogenous. Thus the growth of employment is demand determined and that the fundamental determinants of long-term growth of output also influence the growth of employment.

**Theories of Inflation**

*(a) Demand-Pull Inflation*

Demand-pull inflation is the traditional and most common type of inflation. It takes place when aggregate demand is rising while the available supply of goods is becoming less.

There are two principal theories about the demand-pull, that of the monetarists and the Keynesians. The monetarists stress the role of money in the demand-pull inflation. They state that when the money supply is increased in order to increase production and employment, it creates an inflationary situation with an economy.

Friedman (a monetarists), held that “inflation is always and everywhere a monetary phenomenon that arises from a more rapid expansion in the quantity of money than in total output.” According to Keynes, an increase in general price levels or inflation is created by an increase in the aggregate demand which is over and above the increase in aggregate supply. If a given economy is at its full employment output level, an increase in government expenditure (G), private consumption (C) and private investment (I) will create an increase in aggregate demand; leading towards an increase in general price.

*(b) Cost-Push Inflation*

Cost-push inflation basically means that prices have been “pushed up” by increases in costs of any of the four factors of production (labour, capital, land or entrepreneur), when the companies are already running at full production capacity. The basic cause of cost-push inflation is the rise in money wages more rapidly than the productivity of labour.

Cost-push inflation steams out from the demand for an increase in real wages by trade unions. When wages are increased, firms tend to raise the price of their goods in order to cover the increase in the cost of production. Therefore, increases in price will lead to cost-push inflation.

*(c) Structural Inflation*

The structuralist theory of inflation, otherwise known as mixed inflation is believed to be a combination of demand-pull and cost-push inflation theories. The structuralists emphasize rigidities in supply as the salient force in the theory.

The argument is that, as the economy develops, rigidities arise, which lead to structural inflation. They hold that inflation will persist as long as the structural limitations are not eliminated. The obstacles are of production, institutional, social and cultural dimensions.

**UNEMPLOYMENT-INFLATION TRADE-OFF**

Though unemployment is painful to those who have no source of income, reducing unemployment is not costless. In the short-run, a reduction in unemployment may come at the expense of a higher rate of inflation, especially if the economy is close to full capacity, where resources are almost fully employed.

There are two possible explanations of this relationship- one in the short-run and another in the long-run. In the short-run, there is an inverse relationship between the unemployment and inflation (Phillips curve), while it has been observed by economists that in the long-run the concepts of unemployment and inflation are not related. The relationship has presented regulators with a number of problems.

**The Phillips Curve**

Phillips Curve was named after the British economist A.W. Phillips, who first examined the relationship between the rate of unemployment and the rate of money wage changes. His analysis was based on data for the United Kingdom from 1861-1957.

Phillips derived an empirical result that there was an inverse relationship between the rate of unemployment and the rate of increase in money wages. Phillips found a consistent inverse relationship: when unemployment was high, wages increased slowly; when unemployment was low, wages rose rapidly.
Figure 1 shows a typical Phillips curve fitted to data for the United States from 1960-1969. The curve is convex to the origin which shows that a percentage change in money wages rises with decrease in the employment rate. If for instance, the government stimulates the economy and lowers the unemployment rate from 6% to 5%, the figure above indicates that the cost will be in terms of higher inflation, which will increase from 1% to 1.7%. Thus there is a trade-off between the rate of change in money wage and the rate of unemployment.

Phillips’ hypothesis gained support from Paul Samuelson and Robert Solow, who were among the first researchers on the trade-off thesis. Samuelson and Solow (1960) examined the relationship between the two macroeconomics variables in the context of the United States. The results led to a conclusion that there existed an inverse relationship between unemployment and inflation rates in the USA. Furthermore, Solow (1970) and Gordon (1975) confirmed the existence of a negative trade-off relationship between unemployment and inflation using U.S. macroeconomic data. These empirical findings have been known as the “Solow-Gordon affirmation” of the Phillips curve.

MODEL SPECIFICATION
In an attempt to explore empirically on the relationship between unemployment and inflation in Nigeria, a model will be employed. In the model, inflation, Gross Domestic Product (GDP), interest rate, and government expenditure will be regressed on unemployment; in order to ascertain the impact of the explanatory variables on the explained variable.

From the foregoing analysis, the model can be written in its functional form as follows;

UNEMP = f(INF, GEXP, INTR, GDP)

Where:
- UNEMP = Unemployment Rate.
- INF = Inflation Rate.
- GEXP = Government Expenditure.
- INTR = Interest Rates.
- GDP = Gross Domestic Product
- f = Functional relationship

Expanding the model into a linear mathematical relationship, we have;

UNEMP = a_0 + a_1INF + a_2GEXP + a_3INTR + a_4GDP
However, our econometric model is yet to complete. We complete the econometric model by including the stochastic term \( e_t \) becomes;

\[
\text{UNEMP} = a_0 + a_1\text{INF} + a_2\text{GEXP} + a_3\text{INTR} + a_4\text{GDP} + e_t
\]

Where:
- \( a_0 \) is the intercept depicting unemployment when the explanatory variables are equal to zero.
- \( a_1, a_2, a_3, a_4 \) are the coefficients or parameters attached to the explanatory variables. The inclusion of the stochastic or error term \( (e_t) \) in the above model is to capture the impact of other variables that are not included in the models.

**PRESENTATION OF RESULT AND DATA ANALYSIS**

Table 1: Regression result for the model (Modeling UMP by OLS)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-value</th>
<th>t-prob</th>
<th>partR²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.0175</td>
<td>3.7689</td>
<td>1.066</td>
<td>0.2985</td>
<td>0.0513</td>
</tr>
<tr>
<td>INTR</td>
<td>0.16628</td>
<td>0.18713</td>
<td>0.889</td>
<td>0.3843</td>
<td>0.0362</td>
</tr>
<tr>
<td>GDP</td>
<td>-3.2956e-008</td>
<td>1.6856e-007</td>
<td>-0.196</td>
<td>0.8469</td>
<td>0.0018</td>
</tr>
<tr>
<td>INF</td>
<td>-0.091820</td>
<td>0.042007</td>
<td>-2.186</td>
<td>0.0403</td>
<td>0.1853</td>
</tr>
<tr>
<td>GEXP</td>
<td>4.3061e-006</td>
<td>1.3917e-006</td>
<td>3.094</td>
<td>0.0055</td>
<td>0.3131</td>
</tr>
</tbody>
</table>

\( R^2 = 0.771086 \quad F (4, 21) = 17.684 \ [0.0000] \quad DW = 0.955 \)

**Result Interpretation**

Analysis of the Regression Coefficients:
- The intercept of unemployment when all explanatory variables are held constant is 4.0175.
- The coefficient of interest rate shows that, with a unit increase in the interest rate, unemployment will increase by 0.16628.
- The coefficient of Gross Domestic Product, tells us that when there is a unit increase in the GDP, unemployment will decrease by 3.2956.
- The coefficient of inflation shows that, with a unit increase in the explanatory variable INF, unemployment will decrease by 0.091820.
- Also, the coefficient of Government Expenditure helps us to understand that, a unit increase in GEXP will result to an increase in unemployment by 4.3061.

**Economic A Priori Condition:**

This section compares the regression results with the a priori expectation, to see if the results gotten conform to economic theory.

Table 2: Economic a priori test for the model

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Expected signs</th>
<th>Observed signs</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest rate (INTR)</td>
<td>+</td>
<td>+</td>
<td>Conforms</td>
</tr>
<tr>
<td>Gross Domestic Product (GDP)</td>
<td>-</td>
<td>-</td>
<td>Conforms</td>
</tr>
<tr>
<td>Government Expenditure (GEXP)</td>
<td>-</td>
<td>+</td>
<td>Does not conform</td>
</tr>
<tr>
<td>Inflation Rate (INF)</td>
<td>-</td>
<td>-</td>
<td>Conforms</td>
</tr>
</tbody>
</table>
From table 2, government expenditure did not conform to economic theory - which states that an increase in government expenditure will increase employment, thereby decreasing the unemployment rate in the country. This variation from economic theory occurred because, in Nigeria, most of the expenditures made by the government are not directed towards the real sector of the economy. Expenditure in the sector of the economy expands the industrial sector, increasing its capacity to absorb more labour, thereby increasing employment. Thus, this result shows that government expenditure has no reducing effect on the unemployment rate in Nigeria.

**Statistical Criteria**

1. The $R^2$ (Coefficient of determination):
The $R^2$ of the model is 0.771086, showing that the explanatory variables (or independent variables) explains about 77.1% of the explained variable (dependent variable).

2. The t-test (Student t):
To recall, the t-test is used to test if the independent variables are individually statistically significant to the dependent variable. Under $n - k$ degrees of freedom at 5% level of significance, the critical value is ±2.080. Thus we reject $H_0$ that the variable is statistically significant if $t_{cal} > t_{tab}$ in absolute values (that is, ignoring negative values) and accept it if otherwise.

**Table 3: T-test for the model**

<table>
<thead>
<tr>
<th>Variables</th>
<th>t-value</th>
<th>5% critical value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.066</td>
<td>±2.080</td>
<td>Not statistically significant</td>
</tr>
<tr>
<td>INTR</td>
<td>0.889</td>
<td>±2.080</td>
<td>Not statistically significant</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.196</td>
<td>±2.080</td>
<td>Not statistically significant</td>
</tr>
<tr>
<td>INF</td>
<td>-2.186</td>
<td>±2.080</td>
<td>Statistically significant</td>
</tr>
<tr>
<td>GEXP</td>
<td>3.094</td>
<td>±2.080</td>
<td>Statistically significant</td>
</tr>
</tbody>
</table>

**Hypothesis Testing:**

1. $H_0$: There is no trade-off relationship between unemployment and inflation in Nigeria.
2. $H_0$: Government expenditure has no impact on unemployment in Nigeria.
3. $H_0$: Gross domestic product has no significant impact on unemployment in Nigeria.

From the regression result, the coefficient of inflation is negative, thus, showing that a trade-off relationship exists between unemployment and inflation. Also, inflation and government expenditure was found to be statistically significant, while gross domestic product was found to be statistically insignificant. Therefore, we conclude by saying:

- There is a trade-off relationship between unemployment and inflation in Nigeria.
- Government expenditure has a significant impact on unemployment in Nigeria.
- Gross domestic product has no significant impact on unemployment in Nigeria.

**F-test:**
This shows the overall performance of the regression model. The decision rule as stated previously is to reject $H_0$ that the model is well specified and adequate for forecasting and policy analysis if $F_{cal} > F_{0.05}$ and accept it if otherwise.
Table 4: F–test for the model

<table>
<thead>
<tr>
<th>$F_{cal}$</th>
<th>$F_{tab}$ at 0.05 significant level</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.684</td>
<td>2.8401</td>
<td>Reject $H_0$ and accept $H_1$</td>
</tr>
</tbody>
</table>

From table 4, the result shows that the model is well specified and considered as being good and adequate for forecasting and policy analysis. It further states that the overall regression is significant and statistically different from zero.

Policy implication:
The findings of this research work confirm the existence of the trade-off relationship between unemployment and inflation in Nigeria. Therefore, policy makers should exercise caution when implementing policies that will reduce unemployment Nigeria, because a decrease in unemployment rate could make inflation to rise.

SUMMARY OF FINDINGS
The research work is centered on unemployment and inflation in Nigeria. Its main objective was to ascertain if the trade-off thesis holds in Nigeria. To achieve this, various data on unemployment and inflation were collected from 1988-2013, also other variables such as government expenditure, interest rates, and the gross domestic product were included. These variables were then subjected to multiple regression analysis, using OLS estimator, with unemployment as its dependent variable. The summary of the findings are given below;

- Inflation was found to conform to the a priori expectation, by having a negative sign. Its significance test revealed that inflation has a significant impact on unemployment in Nigeria.
- Interest rate and gross domestic product conformed to the a priori expectation, by having positive and negative signs, respectively. Furthermore, the result also revealed that both variables have no significant impact on unemployment, when they were subjected to the individual significance test.
- Government expenditure on the other hand, did not conform to the a priori expected sign. When subjected to the individual significance test, it was found that it has a significant impact on unemployment.
- The goodness of fit test revealed that inflation, government expenditure, interest rate, and gross domestic product explain 77.1% of the dependent variable (unemployment), which is a good sign.
- Also, the general significance of the model, using the F-test, showed that the model is good and could be used for forecasting.

CONCLUSION
The researcher in other to validate the existence of a Phillips curve carried out various tests, using the Nigerian economy as a case study. The result of the test revealed that unemployment and inflation are inversely related, thus confirming the existence of the Phillips curve in Nigeria, with inflation having a significant impact on unemployment in Nigeria.

POLICY RECOMMENDATIONS
The trade-off relationship between unemployment and in inflation poses a dilemma for our policy formulators, since in order to reduce unemployment, the inflation rate in the economy tends to rise. Thus, of great importance is the need for constructive and well-specified policy recommendations that will help to ameliorate the situation of unemployment and inflation in Nigeria. Below are some policy prescriptions, which will help alleviate the current problems of unemployment and inflation in Nigeria.

1. Government should strive to develop the agricultural sector which has great potentials to increase the supply of farm products and other basic necessities of life. The increased supply will reduce prices and
increase in employment generation. To achieve this, various specific agricultural policy measures should be promoted and pursued vigorously.

2. Massive investments should be carried out in the real sector of the economy, by establishing job-creating industries, which will help to reduce the level of unemployment in the country, increase output, reduce prices of goods and services, and thus, reducing the level of inflation in the economy.

3. The free flow of information between employers and employees should be enhanced, through the reduction in the cost of job or employee search by means of job data banks, thus resulting to increased efficiency in the labour market. Similarly, training and educational programmes should be increased and geared towards innovations and productivity, thereby, reducing the rate of unemployment in the economy.

4. It is also recommended strongly that special attention be given to policy implementation. In this regard, the government should set up a policy implementation body or committee in the presidency for the purpose of monitoring government policies and ensuring that they are implemented according to prescriptions.

REFERENCES
Grill, E. and G. Zanalda (1995); "Growth and Employment in Developing Countries: Where Do We Stand?", Development Studies Working Papers No. 86, October, The International Development Centre.