
Unemployment and Inflation in Nigeria

Nwevo Chimezie Nwikpo, +2349032108129, nwevochimezie@gmail.com

Economics Department, Social Science and Humanities, Ebonyi State University, Abakaliki - Nigeria

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Abstract

Nigeria's economy is concerned by the rate of inflation and unemployment growth, which has become a recurrent decimal. Despite the government's best efforts, these macroeconomic problems have little to no impact on the economy. Consequently, this study looked at how unemployment in Nigeria affects inflation. The study's specific goals were to determine the impact of total government spending on inflation in Nigeria from 1981 to 2022 as well as the degree to which unemployment affects price increases in Nigeria. Unit root tests and ARDL tests served as the study's methodology. According to the empirical findings, unemployment had a negative long-term and short-term impact on inflation in Nigeria. Total government spending also had a positive long-term impact on inflation. The study suggests that in order to ensure an even and smooth operation of the economy, the government should make every effort to strike a balance between the unemployment rate and the inflation rate. In order to prevent a rise in inflation in the nation, the government should spend less and direct more of its resources toward the production sectors.

1.1 Introduction

Researchers and decision-makers have expressed concern about the relationship between the rate of inflation and unemployment in Nigeria. Though there are conflicting findings regarding the precise nature of the relationship between inflation and unemployment in Nigeria, numerous studies have been conducted to understand the nature of the relationship between inflation and unemployment. Since policymakers would like to have as low rates of inflation and unemployment as possible, the issues of inflation and unemployment are therefore crucial to the economy. However, many economists think that, in the long run, macroeconomic instability in the economy won't be caused by inflation and unemployment rates that are in the single digits and, at most, 5 percent. Consequently, the importance of achieving and maintaining the desired stability between inflation and unemployment that will promote an increase in economic growth in the country cannot be overvalued if the goal of stability of the economy would be achieved. Macroeconomic stability is essential for growth, planning, income redistribution, and all other developmental goals in the country.

So, the general rise in the cost of goods and services throughout the economy is what is meant by the term "inflation.". As a result of rising commodity and service prices brought on by inflation, the country's currency loses some of its purchasing power. According to some researchers, however, low inflation is also harmful because it can cause economic stagnation in the economy, whereas a small amount of inflation is required because it promotes economic growth. This is because high inflation rates have a negative impact on the economy. The issue of inflation is not restricted to national borders or to emerging market economies; it can also be imported alongside goods and services from the developed or global market.

The percentage of the labor force that is unemployed but available and looking for work, according to the World Bank, is referred to as unemployment. One of the major hindrances to the nation's economy is unemployment, which results in a waste of the resources and labor needed for development and growth as well

✉Corresponding author: Nwevo Chimezie Nwikpo

E-mail: nwevochimezie@gmail.com

as low economic output and lower income and well-being for the populace. The most frequently used indicator of unemployment is the unemployment rate, which is calculated by dividing the number of employed people (the labor force) by the number of people who are unemployed. Therefore, the unemployment rate is used as a gauge to assess the health of the nation's economy; the lower the unemployment rate, the healthier the nation's economy is, while the higher the increase in the unemployment rate, the worse the nation's economy is. Even more so, there are numerous classifications of unemployment made by economists. Voluntary and involuntary unemployment are the two most prevalent types of unemployment. When an individual leaves a job voluntarily in search of a better opportunity and remains unemployed between the time the individual left the job and the time the individual would obtain a new position, the individual is said to be experiencing voluntary unemployment. Conversely, involuntary unemployment refers to an individual who has been fired or laid off and is currently seeking employment. Orji, Anthony-Orji, and Okafor (2015).

However, Nigeria's previous administrations had made several attempts to manage and reduce the problems with both inflation and the unemployment rate. For instance, the federal government's National Economic Empowerment and Development Strategy (NEEDS) was designed to, among other things, lower Nigeria's inflation rate and provide jobs for many unemployed Nigerians. Inflation and the unemployment rate have risen despite all of these policies. (Omoke, 2010).

Numerous factors have been identified from theoretical and empirical studies as influencing either an increase in prices or a rate of unemployment. Government spending and economic growth via its feedback mechanism are a few examples of such factors, but they are not limited to them. On the impact of these factors on inflation or unemployment in the nation, studies have produced varying and inconsistent results. Thus, the impact of unemployment on government spending and the expansion of the economy on inflation has come under discussion. For instance, some economists support Wagner's theory of public spending while emphasizing the dominance of the Keynesian postulation in contemporary economies when discussing the impact of government spending on the economy. The majority of these elements are covered in the section below.

The term "total government expenditure" refers to all of the money spent by the federal, state, and local governments for consumption, welfare, and other basic social services. It can also be described as transfer payments, investment spending, and consumption spending by the government. In national income accounting, the purchase of goods and services by governments for immediate consumption in order to directly meet the individual or group needs of the community is classified as a government final consumption expense. Government purchases of goods and services with the intention of generating future benefits, such as infrastructure investments or research expenditures, are classified as government investment expenditures (government gross capital formation). Together, these two categories of government spending—on final consumption and gross capital formation—represent one of the main contributors to the GDP and have the power to either boost employment or raise inflation.

Increases in the nation's output of finished goods and services during a given year are regarded as indicators of economic growth. A measure of economic growth in percentage terms from one period to the next is the economic growth rate. This metric is expressed in nominal terms and is not adjusted for inflation. The gross national product (GNP) can also be used if a country's economy heavily depends on foreign earnings. In practice, it is a measure of the rate of change in a country's gross domestic product (GDP) from one year to the next. It gives information about the broad character and scope of the overall economy. Double-digit inflation has been shown to have a negative impact on economic growth, while rising unemployment lowers the nation's capacity for production.

1.2 Statement of the Problem

✉Corresponding author: Nwevo Chimezie Nwikipo

E-mail: nwevochimezie@gmail.com

Nigeria's persistently rising unemployment rate and inflation have raised concerns there. As a result, the Nigerian economy is not only characterized by a high rate of inflation that coexists with a steady rise in unemployment, but also by the existence of slow economic growth (stagflation). These underline how unsteady and unhealthy Nigeria's economy is. The economy reached the point of "stagflation" as a result of the interaction of rising prices, higher unemployment, higher government spending, and slower economic growth; this resulted in a topic of much discussion. The governments, however, seem unable to either lower inflation without raising unemployment or raise inflation without lowering unemployment. It is deceptive to assume that there is a positive correlation between the cyclical average rate of unemployment and the cyclical average rate of price change. In order to address these problems, this study set out to investigate the relationship between unemployment and inflation in the nation and the position of the Philip curve, which postulates that there is a trade-off between the two and offers the government a potential solution to the nation's problems. In Figure 1, the trend of unemployment and inflation is shown.

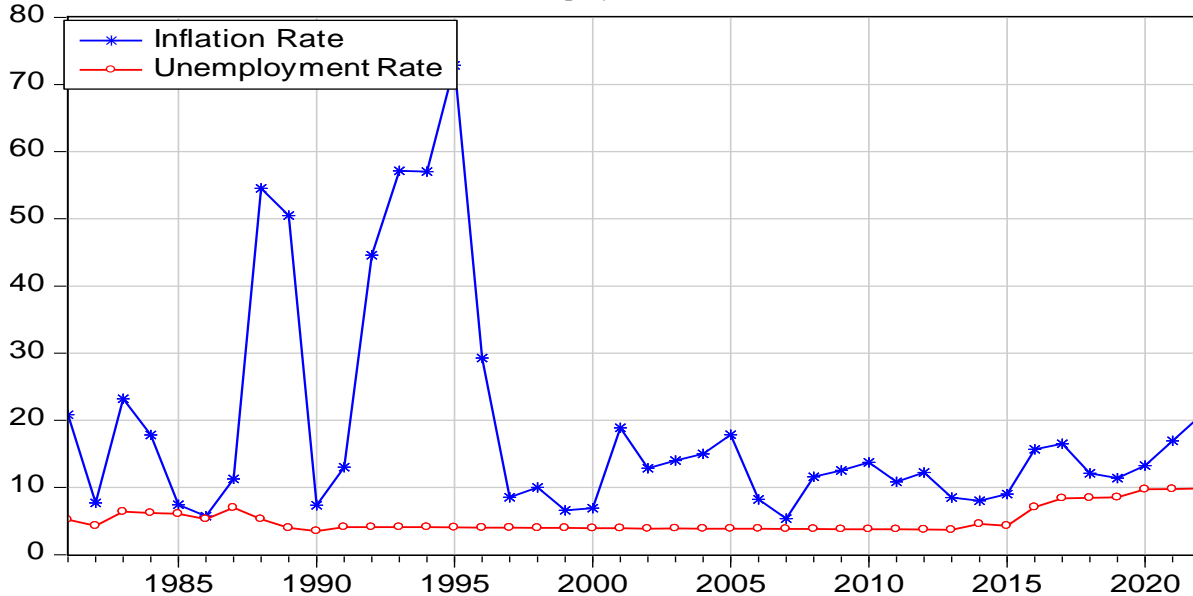


Fig. 1: Trend of inflation and Unemployment Rate in Nigeria from 1981 – 2022

The trend of inflation and the unemployment rate in Nigeria are depicted in Figure 1. The graph showed that during the study period, both the inflation and unemployment trends were moving from left to right in an upward direction. Therefore, this study is designed to examine the impact inflation has on unemployment in relation to any potential trade-off between unemployment and inflation in Nigeria during the period under review. This study is based on the upward movement in the same direction between inflation and unemployment in Nigeria.

1.3 Objective of the study

The major objective of this study is to investigate the impact of unemployment and inflation rate in relation to the trade-off between each other; while the specific objectives of the study are stated as follows:

- (i) To determine how much unemployment in Nigeria has an impact on inflation.
- (ii) To determine whether total government spending in Nigeria has any impact on inflation.

1.4 Significance of the Study

The government will gain from this study because it will aid decision-makers in weighing the trade-off between unemployment and inflation in the nation. Additionally, this study will serve as a source of research materials for academics and researchers planning to conduct similar investigations into how unemployment affects inflation in Nigeria. The results of this study will also contribute to the body of literature that already exists on the subject of recent studies on the relationship between unemployment and inflation in Nigeria.

2.1 Literature Review and Hypothesis

✉Corresponding author: Nwevo Chimezie Nwipko

E-mail: nwevochimezie@gmail.com

This section focuses on related research from earlier studies on unemployment and inflation in both developed and developing nations. Among them is Annalisa and Piero's (2021), which looked at the nonlinear relationship between inflation and unemployment in the USA from 1961 Q1 to 2019 Q4. The study's dual goals were to identify the appropriate kind of implied nonlinearity and find a broad model that could produce a Phillips curve that resembled the empirical one. According to both piecewise and threshold models, the study discovered evidence of a convex US price Phillips curve from 1961 first quarter to 2019 fourth quarter. The conclusion supports the use of a macro system that switches regimes and exhibits some novelty in terms of the function of supply shocks and model-specific convexities. The latter is successful in three endeavors. It produces a medium-run endogenous cycle where unemployment was not a NAIRU; it can produce a Phillips curve that resembles its empirical counterparts; and, finally, it offers fresh insights into matters of economic policy.

Uche (2019) conducted a study on “the dynamics of inflation and unemployment in Nigeria: a re-examination of Philip's Curve Theory” using annualized time-series data from the CBN and NBS from 1981 to 2017. The study found that Philip's curve doctrine applied in Nigeria and made use of the Fully Modified Least squares Regression (FMOLS). As a result, the study suggested that a suitable threshold be established to guarantee stability in Nigeria's macro-economy. It also suggested that the government should place more of an emphasis on output targeting through economic deepening rather than solely relying on monetary targeting to control inflation and the unemployment rate.

Eze, Apeh, and Eze (2015) examined the “effects of unemployment and inflation on the level of economic activity in Nigeria”. To ascertain whether there is any causal relationship between inflation and unemployment, the Granger Causality test was applied. The study found a causal relationship linking unemployment and inflation, and that both have a significant impact on Nigeria's economic performance. The findings also showed that, over the long and short terms, the two variables have an inverse relationship with economic growth; the study comes to the conclusion that while inflation and unemployment have a negative short-term relationship, they have a positive long-term relationship. As a result, the study made the recommendation that the Central Bank of Nigeria (CBN) continue to pursue its policy of inflation targeting, infrastructure development, and credit availability with vigor and transparency in order to enable more people to conduct business in Nigeria. Nevertheless, because the study was conducted during an outdated time period, its findings might no longer be applicable in the nation. A recent study on the topic is therefore necessary.

A study on the correlation between unemployment, inflation, and economic growth in Nigeria from 1987 to 2012 was conducted by Mohammed, Okoroafor, and Awe (2015). The relationship between unemployment, inflation, and economic growth is examined using secondary data in this study. The study's methodology was ordinary least squares. The findings show that inflation and unemployment have an adverse impact on economic growth in Nigeria, while interest rates and total public spending have a positive long-term impact. Inflation may not be caused by pressure on aggregate demand, but rather by hiccups in the supply chain of goods from both domestic and foreign supply outlets, which could account for the inverse relationship between inflation and price level. Empirical deductions also indicate the existence of significant long-to-short-run feedback disequilibrium. Inflation, unemployment, and economic growth in Nigeria do, however, all have a causal relationship. In order to create a sustainable and enabling environment that will enhance the increase in domestic output, the study concluded that the government must urgently improve or continue to fine-tune macroeconomic policy instruments. The methodology and long-term interpretation of the study's results, despite the fact that ARDL was not used in the study, may be deceptive despite the fact that many events have occurred since the study was conducted and its findings may no longer reflect on the current realities of the subject matter. As a result, it was necessary to conduct this ARDL-based study on how unemployment affects inflation in Nigeria.

2.2 Hypothesis formulation

The hypotheses of the study were as follows

✉Corresponding author: Nwevo Chimezie Nwipko

E-mail: nwevochimezie@gmail.com

(i) Unemployment has no significant impact on inflation in Nigeria

Felix and Moukhtar (2022) investigated the effect of inflation on unemployment in Nigeria from 1985 to 2019 using nonlinear autoregressive distributive lag (NARDL). The outcome of the nonlinear ARDL revealed that, in the short run, inflation (positive) has a negative and significant impact on unemployment while inflation (negative) has a positive and significant impact. Similar to this, long-term positive inflation has a negative and significant impact on unemployment. The study's findings support the existence of the nonlinear Phillips curve in Nigeria during the time of the study, according to some empirical evidence. The study suggested that the government implement policies that promote production in order to lessen the positive rise in price. However, even though NARDL was used in the study, the impact of government spending on inflation in the nation was not included in the study's findings. So, using ARDL, this study looked at the effect of unemployment on inflation in Nigeria from 1981 to 2022.

Edeme (2018) used annual time series data from 1972 through 2015 obtained from the CBN's statistical bulletin in his study to provide an empirical understanding of Nigeria's Non-Accelerating Inflation Rate of Unemployment (NAIRU). To determine whether the Philips curve postulate holds true in Nigeria over the long and short terms, the Ordinary Least square (OLS) method was used. The results of the empirical analysis demonstrated that there is a short- and long-term negative but insignificant relationship between unemployment and inflation in Nigeria. While this study used ARDL to examine the impact of unemployment on inflation from 1981 to 2022, Edeme (2018) used OLS to examine inflation and unemployment in Nigeria from 1972 to 2015.

Using the Ordinary Least square (OLS) technique for data analysis, Ademola and Badiru (2016) investigated the impacts of unemployment and inflation on economic performance in Nigeria. According to the study, RGDP, unemployment, and inflation are all related over the long term. The findings also revealed that, contrary to expectations, increases in output are not accompanied by increases in unemployment and inflation, but rather the opposite. The study's findings, however, contradicted the OLS methods employed in the analysis and showed a long-term relationship between RGDP, unemployment, and inflation. Thus, a new analysis of the effect of unemployment on inflation using ARDL techniques is required in this study.

Orji, Anthony-Orji, and Okafor (2015) investigated the relationship between unemployment and inflation in Nigeria by determining whether the Original Phillips curve hypothesis is true in that country. With data spanning the years 1970 to 2011, the study used a distributed lag model. The consumer price index, which measures the rate of inflation, was regressed against the unemployment rate, money supply growth rate, budget deficit, real gross domestic product, interest rate, and current interest rate lag. The findings showed that the unemployment rate in Nigeria is a significant determinant of inflation and that there is a positive correlation between inflation and that rate. The Phillips curve hypothesis in Nigeria is refuted by this finding. The study therefore suggested that in order to reduce the threat of inflation and unemployment as well as the issue of stagflation in Nigeria, the government and monetary authorities should diversify the economy and implement the necessary policies. Despite the fact that the study's findings did not support the Phillips curve hypothesis in Nigeria, events since the study's completion have changed the context in which it was conducted, making it necessary to reevaluate how unemployment affects inflation in Nigeria.

(ii) Total government expenditure has no significant effect on inflation in Nigeria.

Akobi, Umeora, and Atueyi (2021) examined government spending and the rate of inflation in Nigeria from 1981-2019. Government spending was segmented into government expenditures on agriculture (GOA), education (GOE), health (GOH), and telecommunication (GOT) as the independent variables, with inflation rate (INF) serving as the dependent variable. To analyze the data, multivariate regression based on Johanson Cointegration and Error Correction Model (ECM) was used. According to the study, government spending on education has a modestly positive impact on inflation rates. The study also found that while spending by the government on telecommunications and health care has a positive and significant impact on inflation, spending by the government on agriculture and education has a positive but insignificant impact. According to the study, the government should increase funding for the health and education sectors in order to improve the health

✉Corresponding author: Nwevo Chimezie Nwipko

E-mail: nwevochimezie@gmail.com

and skill of economic actors, which will increase productivity. The government should also provide adequate infrastructure in order to support economic growth and lower the high inflation rate. The study's results, however, were devoid of any correlation between unemployment and inflation in the nation, even though its time period covered 1981 to 2019. As a result, this study looks at both the impact of unemployment and government spending on inflation in Nigeria from 1981 to 2022.

Chinedu, Daniel, and Ezekwe (2018) investigated the effects of sectoral spreads of public spending on the inflation rate in Nigeria from 1980 to 2017. The data were put through the Unit Root, Johansen Cointegration, Error Correction test, and Durbin-Watson test. According to the study's findings, the Nigerian inflation rate was positively impacted by sectoral spreads of government spending. Out of the five variables that make up sectoral government spending, three of them have a long-term correlation with real GDP. The findings of this study supported Wagner's law, according to which an increase in government spending leads to an increase in economic growth. The study found that government spending on agriculture and defense had a statistically significant impact on Nigeria's economic performance, but that spending on health care, education, and transportation and communication did not. Based on the aforementioned findings, the study recommended that more anti-corruption agencies be established by the Nigerian government in order to hasten the prosecution and execution of judgment against public fund thieves. ARDL is not used in the study, despite the fact that it is out of date.

Obasikene (2017) looked at government spending on health from 1986 to 2014 and how it affected inflation. When the inflation rate is the dependent variable and is affected by capital expenditure, recurrent expenditure, and money supply, multiple regression techniques of the ordinary least squares (OLS) are used. The findings showed a negative relationship between the inflation rate in Nigeria and both capital and ongoing government spending as well as the total money supply. Spending on capital projects by the government in particular has a big positive impact on how fast the Nigerian economy is growing. The government's ongoing expenses have a negligible positive impact on Nigeria's economic expansion. The Independent Corrupt Practices and Other Related Offences Commission and the Economic and Financial Crimes Commission should be strengthened and reformatted, according to the study, to encourage transparency in the management of public spending. The Nigerian government should also adopt a framework for public medium-term spending to ensure predictable and sustainable public spending at all levels of government. However, because the study was conducted in an out-of-date period of time, its conclusions might not accurately reflect current knowledge of how government spending affects inflation. This study on the impact of government spending on inflation in Nigeria from 1981 to 2022 is thus necessary.

Edeme, Emecheta, and Omeje (2017) looked into how public health spending, as measured by infant mortality and life expectancy at birth rates, affected Nigeria's inflation rate from 1986 to 2015. The findings indicated a long-run equilibrium relationship between public health spending and health outcomes and the rate of inflation. Additionally, the findings demonstrated that an inflation rate was brought on by a sustained increase in public health spending. Additionally, while per capita income in Nigeria has no impact on health outcomes, the urban population and HIV prevalence rate have a significant impact on health outcomes. The research results suggested that increasing public health spending is still essential for enhancing Nigerian health outcomes. Edeme et al.'s (2017) study looked at a portion of government spending on health, but their conclusions do not account for all of the government spending in the nation on inflation. Thus, a study was conducted to determine how Nigerian inflation would have changed between 1981 and 2022 based on total government spending.

3.1 Data and Method

Time series data from the Central Bank of Nigeria's statistical bulletin covering the years 1981 to 2022 were used in the study. The following is a description of the study's variables.

✉Corresponding author: Nwevo Chimezie Nwikpo

E-mail: nwevochimezie@gmail.com

(i) Inflation Rate (INF): The inflation rate is the steady rise in a nation's prices of goods and services over time. Prices must continue to rise over a long period of time, typically more than a year, in order for an increase to be considered inflation. As a result, INF serves as the study's dependent variable, with changes in INF being influenced by other variables like the unemployment rate, total government spending, and economic growth. Therefore, inflation can be simply defined as too much money trying to buy too few goods or, alternatively, as the steady rise in a country's overall price level.

(ii) Unemployment Rate

A layperson would define unemployment as the condition of being jobless, whereas economists define it as the proportion of the labor force that is not employed despite being able, willing, and legally qualified to do so. The dependent variable's changes are explained using unemployment as the independent variable.

(iii) Total Government Expenditure (TGE)

The total of the federal government's recurrent and capital expenses for the time period under consideration is referred to as government expenditure. Through the creation of industries that create jobs, an increase in government spending will lower unemployment.

(iv) Economic Growth (RGDP)

This is described as the total cost of all goods and services produced in a nation, typically over the course of a year. It only considers domestic production and excludes foreign-sourced net income. In the study, real GDP is used as a proxy for economic growth. In order to explain changes in the dependent variable, the study uses economic growth as a control variable.

3.2 Model Specifications

The Phillips Curve hypothesis is the foundation of this study. As a result, the study's expression of the functional relationship between inflation and unemployment is as shown below.

$$INF = f(UMP, LTGE, LRGDP) \quad (1)$$

Where INF is the inflation rate, UMP is the unemployment rate, LTGE is the logarithm of total government expenditure, and LRGDP is the logarithm economic growth proxy measured by real gross domestic product. The model is rewritten as follows in mathematical form.

$$INF = UMP + LTGE + LRGDP \quad (2)$$

Whereas the econometric form of the model specified in equ (2) is stated thus

$$INF_t = b_0 + b_1 UMP_t + b_2 LTGE_t + b_3 LRGDP_t + \varepsilon_t \quad (3)$$

Where: INF = inflation rate; UMP = unemployment rate; LTGE = logarithm of total government expenditure; RGDP = real gross domestic product; ε_t = Error term; and b_{is} = Parameters estimates.

(i) ARDL Bounds Tests

Nigerian unemployment and inflation are examined using the ARDL Bound test to see if there is a long-term correlation between the two. This is how the model is described

$$\Delta INF_t = a_0 + \sum_{i=1}^k b_1 \Delta INF_{t-1} + \sum_{i=1}^k b_2 \Delta UMP_{t-i} + \sum_{i=1}^k b_3 \Delta LTGE_{t-i} + \sum_{i=1}^k b_4 \Delta LRGDP_{t-i} + \delta_1 INF_{t-1} + \delta_2 UMP_{t-1} + \delta_3 LTGE_{t-1} + \delta_4 LRGDP_{t-1} + e_{1t} \quad (4)$$

Where all the variables were as defined above, the coefficients from β_1 to β_4 represent the short-run coefficients whereas the coefficients from δ_1 to δ_4 represent the long-run coefficients of the ARDL model. Also, β_0 is the drift component; "k" is the maximum lag length while e_{1t} is the stochastic error term.

The bounded F-statistic test is used to determine whether the model's key variables have a stable, long-term relationship with one another. Therefore, the short-run (including the Error Correction Model (ECM)) and long-run models were specified as follows bellows, with the expectation that the bound test will demonstrate evidence of co-integration among the specified variables.

(ii) Short-run and ECM model

✉Corresponding author: Nwevo Chimezie Nwipko

E-mail: nwevochimezie@gmail.com

The short-run model of inflation and the unemployment rate is specified thus

$$\Delta INF_t = a_0 + \delta_1 INF_{t-1} + \delta_2 UMP_{t-1} + \delta_3 LTGE_{t-i} + \delta_4 LRGDP_{t-i} + \emptyset ECM_{t-1} + e_{1t} \quad (5)$$

Where \emptyset is the error correction term that measures the speed of adjustment toward the long-run equilibrium, and the remaining coefficients in the short-run dynamics were as defined above.

(iii) Long-run model

The long-run model of the inflation and unemployment rate is specified thus

$$\Delta INF_t = a_0 + \sum_{i=1}^k b_1 \Delta INF_{t-1} + \sum_{i=1}^k b_2 \Delta UMP_{t-i} + \sum_{i=1}^k b_3 \Delta LTGE_{t-i} + \sum_{i=1}^k b_4 \Delta LRGDP_{t-i} + e_{1t} \quad (6)$$

4. Results

4.1 Descriptive Analysis of the Variables

The descriptive statistics of the study were as follows

Table 1: Descriptive statistics

| | INF | UMP | LTGE | LRGDP |
|--------------|-----------|----------|-----------|----------|
| Mean | 17.51000 | 13.73902 | 0.171089 | 10.37524 |
| Median | 11.58000 | 12.60000 | 0.175981 | 10.27359 |
| Maximum | 72.84000 | 43.00000 | 0.723030 | 11.22639 |
| Minimum | -5.500000 | 1.800000 | -0.212297 | 9.530920 |
| Std. Dev. | 17.53939 | 10.65518 | 0.166450 | 0.596870 |
| Skewness | 1.710112 | 0.900792 | 0.527902 | 0.132583 |
| Kurtosis | 5.007072 | 3.041240 | 4.885390 | 1.458503 |
| Jarque-Bera | 26.86571 | 5.547657 | 7.976922 | 4.179481 |
| Probability | 0.060501 | 0.062423 | 0.218528 | 0.123719 |
| Sum | 717.9100 | 563.3000 | 7.014661 | 425.3847 |
| Sum Sq. Dev. | 12305.21 | 4541.318 | 1.108224 | 14.25016 |
| Observations | 41 | 41 | 41 | 41 |

Source: Researcher's Estimate from Eview 9.0 (2023)

The variables used in the study are shown in Table 1 above with descriptive statistics. It displays the findings of common statistics for the study's variables, including mean, median, standard deviation, Jarque-Bera, and others. The study is interested in the mean, skewness, and Jarque-Bera statistics, which assess the normality of the distribution of the variables used in the study in order to guard against unexpected outliers, out of all the descriptive statistics shown in table 1. Until this point, the summary statistic showed that the inflation rate (INF) had the highest average score, with a value of 17.5 percent, followed by the real gross domestic product (RGDP), which had an average score of 10.3 percent, and the unemployment rate (UMP), which had an average score of 13.7 percent. The mean value of total government expenditures (TGE), which represents all government spending, had the lowest average score, with a value of 0.17 percent. However, skewness revealed that the real gross domestic product, inflation rate, unemployment rate, total government spending, and skewness were all positively skewed. Consequently, it is expected that the probability value of the Jarque-Bera statistic will be statistically insignificant for a variable that is normally distributed. The Jarque-Bera statistic, which was based on the normality test of the study's variables, showed that the inflation rate and total government spending were not normally distributed, but that the unemployment rate and economic growth as measured by real gross domestic product were. This is because table 1 showed that while Jarque-Bera's probability values for the variables unemployment rate and economic growth were statistically insignificant, they were statistically significant for the variables inflation rate and total government expenditure. As a result, the figures for the inflation rate and economic growth were checked again and looked for anomalies.

4.2 Unit Root Test Result

The Augmented Dickey-Fuller (ADF) unit root test with trend and intercept employed to test for the stationarity of the time series data used were presented in Table 2 below:

✉Corresponding author: Nwevo Chimezie Nwipko

E-mail: nwevochimezie@gmail.com

Table 2: ADF Unit Root Test of Stationarity of Time Series Data

| Series | ADF tests at Level | | | ADF tests at 1 st Difference | | | |
|--------|--------------------|-------------------|----------|---|-------------------|----------|----------------------|
| | ADF Statistic | 5% Critical Level | p-Values | ADF Statistic | 5% Critical Level | p-Values | Order of Integration |
| INF | -4.716029 | -3.557759 | 0.0034 | - | - | - | I(0) |
| UMP | -1.934593 | -3.548490 | 0.6147 | -4.600892 | -3.548490 | 0.0042 | I(1) |
| LTGE | -2.988266 | -3.548490 | 0.1500 | -6.365965 | -3.536601 | 0.0000 | I(1) |
| LRGDP | -4.561712 | -3.557759 | 0.0050 | - | - | - | I(0) |

*NB: I(0) stands for stationary at a level while I(1) stands for stationary at first difference.

Source: Researcher's Estimate from Eview 9.0 (2023)

Table 3: Phillips-Perron Unit Root Test of Stationarity of Time Series Data

| Series | PP tests at Level | | | PP tests at 1 st Difference | | | |
|--------|-------------------|-------------------|----------|--|-------------------|----------|----------------------|
| | PP Statistic | 5% Critical Level | p-Values | PP Statistic | 5% Critical Level | p-Values | Order of Integration |
| INF | -4.549907 | -3.523623 | 0.0040 | - | - | - | I(0) |
| UMP | -7.604915 | -3.523623 | 0.0000 | - | - | - | I(0) |
| LTGE | -2.978296 | -3.648790 | 0.1500 | -6.395975 | -3.569601 | 0.0000 | I(1) |
| LRGDP | -6.803105 | -3.523623 | 0.0000 | - | - | - | I(0) |

*NB: I(0) stands for stationary at a level while I(1) stands for stationary at first difference.

Source: Researcher's Estimate from Eview 9.0 (2023)

The real gross domestic product and inflation rate were both stationary at a level, according to the Augmented Dickey-Fuller (ADF) unit root test presented in Table 2 of section 4.2, but the unemployment rate and total government spending were both stationary at the first difference. The results of the Phillips-Perron test, on the other hand, are shown in Table 3 and show that the variables such as inflation, unemployment rate, and real gross domestic product, respectively, were integrated at a level while total government expenditure was integrated at the first difference. The results of the ADF and Phillips-Perron unit root tests concurred that the relevant variables had mixed orders of integration (such as at level and first difference), but none of the variables were integrated at the second difference.

4.3 ARDL Bounds Test

Table 4: ARDL Bounds test result.

| Test Statistic | Value | K |
|-----------------------|----------|----------|
| F-statistic | 6.106377 | 3 |
| Critical Value Bounds | | |
| Significance | I0 Bound | I1 Bound |
| 10% | 2.72 | 3.77 |
| 5% | 3.23 | 4.35 |
| 2.50% | 3.69 | 4.89 |
| 1% | 4.29 | 5.61 |

Source: Researcher's Estimate from Eview 9.0 (2023)

According to the ARDL Bound test result shown in Table 4 of section 4.3, there was a long-run relationship between inflation and the unemployment rate in Nigeria during the study period, which was significant at a level of 5%. However, it also indicates a long-term co-integration of Nigeria's inflation and unemployment rates. The F-statistic value of 6.106377, which is shown in table 4 of section 4.3, is greater than the value of the upper bound boundary of 4.35 at a 5% level of significance, indicating that there is a long-term

✉Corresponding author: Nwevo Chimezie Nwiko

E-mail: nwevochimezie@gmail.com

relationship between inflation and the unemployment rate. In light of this, the hypothesis that there is no long-run relationship between Nigeria's inflation rate and its unemployment rate was disproved at a 5% level of significance. Therefore, during the time under review, there was a long-term relationship between Nigeria's inflation and unemployment rate.

4.4 Short-Run Impact of Unemployment on Inflation in Nigeria.

Table 5: ARDL Short-Run Effects and the Coefficient of ECM

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------|-------------|------------|-------------|--------|
| D(INF(-1)) | 0.699748 | 0.094249 | 7.424476 | 0.0000 |
| D(INF(-2)) | 0.063963 | 0.140076 | 0.456629 | 0.6522 |
| D(INF(-3)) | 0.365557 | 0.087509 | 4.177385 | 0.0004 |
| D(UMP) | -0.746711 | 0.272421 | -2.741022 | 0.0116 |
| D(LTGE) | -3.734014 | 10.806109 | -0.345547 | 0.7328 |
| D(LTGE(-1)) | -39.657803 | 8.586051 | -4.618864 | 0.0001 |
| D(LRGDP) | -73.869130 | 33.795927 | -2.185741 | 0.0393 |
| D(LRGDP(-1)) | -16.483006 | 70.396997 | -0.234144 | 0.8169 |
| D(LRGDP(-2)) | -259.527935 | 120.970780 | -2.145377 | 0.0427 |
| D(LRGDP(-3)) | 171.575212 | 67.795405 | 2.530779 | 0.0187 |
| CointEq(-1) | -0.923677 | 0.114641 | -8.057137 | 0.0000 |

Source: Researcher's Estimate from Eview 9.0 (2023)

The short-run coefficients and the Error Correction Mechanism (ECM) results are presented in Table 5 shows as follows:

(a) Short-term changes in Nigeria's unemployment rate due to inflation rate lags of one and three periods, respectively, were favorable. In other words, a percentage increase in the inflation rate's previous values during the period under review resulted in a 0.6 and 0.3 percent increase in the inflation rate's current values in Nigeria, respectively.

(b) In Nigeria, the unemployment rate had a short-term negative effect on inflation. Therefore, during the period under review, a 1% increase in the unemployment rate resulted in a -0.7% decrease in inflation in Nigeria. The outcome, however, further demonstrates that the co-integration coefficient, also known as the Error Correction Mechanism (ECM), had a negative, fractional, and statistically significant sign. On the other hand, the fact that ECM has a negative value and is statistically significant indicates that the long-term relationship between Nigeria's inflation and unemployment rate is cointegration. The outcome of the error correction mechanism shows that every year, roughly 90% of the difference between the short-run and long-run values will be fixed.

4.5 Long Run Impact of Unemployment on Inflation in Nigeria

Table 6: Long Run Coefficients

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| UMP | -0.365557 | 0.087509 | -4.177385 | 0.0004 |
| LTGE | 39.950401 | 19.032890 | 2.099019 | 0.0470 |
| LRGDP | -11.192293 | 5.361667 | -2.087465 | 0.0481 |
| C | 134.746738 | 51.969807 | 2.592789 | 0.0163 |

Source: Researcher's Estimate from Eview 9.0 (2023)

The long-run coefficients result of the variable(s) of interest used in the study as presented in Table 6 of section 4.5 generally show as follows:

(a) In Nigeria during the time under review, the unemployment rate had a negative impact on the inflation rate. In Nigeria, the inflation rate decreased by -0.36 percent over the long run for every percentage point

increase in the unemployment rate, according to the long-run result. According to the presumptive relationship that should exist between the unemployment rate and inflation rate in Nigeria, the two variables have an inverse relationship.

(b) The total amount of government spending influenced Nigeria's inflation positively. According to the findings, Nigeria's inflation rate increased by 39% for every 1% increase in total government spending. The conclusion suggests that total government spending and inflation in Nigeria were correlated.

4.6. Post-diagnostic Tests

The post-diagnostic tests of the result are presented below:

4.6.1 Serial Correlation Test

Table 7: Breusch-Godfrey Serial Correlation LM Test

| | | | |
|---------------|----------|---------------------|--------|
| F-statistic | 0.693689 | Prob. F(2,21) | 0.5108 |
| Obs*R-squared | 2.354916 | Prob. Chi-Square(2) | 0.3081 |

Source: Researcher's Estimate from Eview 9.0 (2023)

Hence, because both the probability values of the observed R-square and F-statistic were statistically insignificant at a 5 percent level of significance, the post-diagnostic result of serial correlation in Table 7 above showed that there was no evidence of serial correlation.

4.6.2 Heteroskedasticity Test

Table 8: Heteroskedasticity –Godfrey Test

| | | | |
|---------------------|----------|----------------------|--------|
| F-statistic | 0.932514 | Prob. F(14,23) | 0.5415 |
| Obs*R-squared | 13.75938 | Prob. Chi-Square(14) | 0.4678 |
| Scaled explained SS | 2.516578 | Prob. Chi-Square(14) | 0.9997 |

Source: Researcher's Estimate from Eview 9.0 (2023)

Due to the statistical insignificance of the probabilities of the F statistic and the observed R square, respectively, at a level of significance of 5%, the Breusch-Pagan-Godfrey test of heteroskedasticity in Table 8 also showed that there was no heteroskedasticity present.

4.6.3 Histogram Normality Test

The histogram normality test result is presented in Figure one below

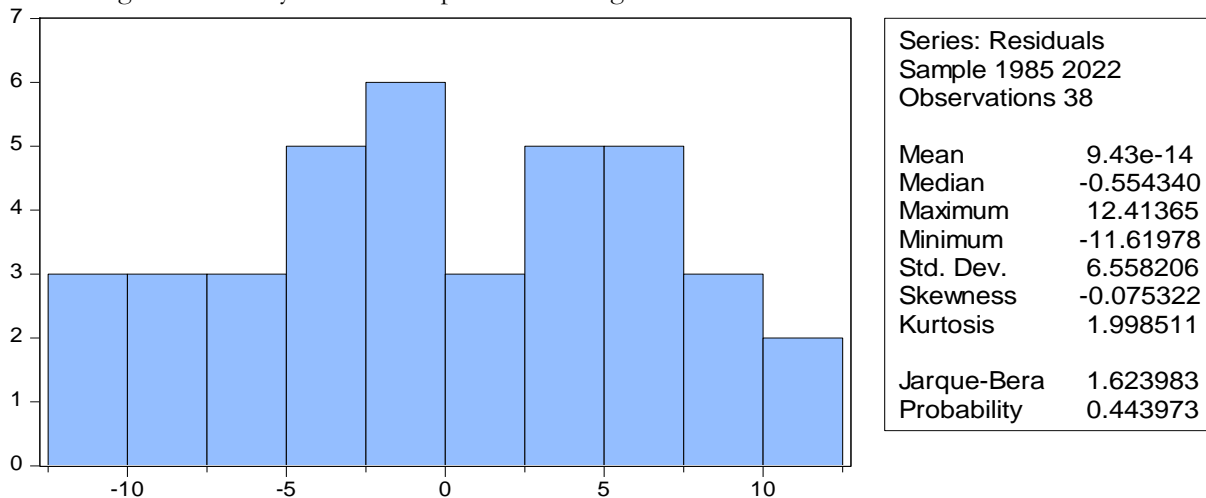


Fig. 2: Histogram Normality Test estimated from Eview 9.0 (2023)

The outcome of the test used to confirm that the residuals from the study's variables were normal is shown in Figure 2. The outcome showed that the Jarque-Bera probability statistics were statistically insignificant at a level of significance of 5%, demonstrating that the residuals of the study's variables were normally distributed.

✉Corresponding author: Nwevo Chimezie Nwikpo

E-mail: nwevochimezie@gmail.com

4.7 Test of Research Hypotheses

The process of testing hypotheses involves using statistics to establish the truth or falsity of a given claim or proposition. The probability values of the estimated coefficients of the study's interest variables were used to test the study's hypotheses at a level of significance of 5% to determine whether to accept or reject the null hypothesis. So, if a given hypothesis' estimated coefficient's probability value is less than a 5 percent level of significance, it is rejected; if not, it is accepted.

4.7.1 Test of Hypothesis One: Nigeria's inflation rate is not significantly impacted by unemployment.

The long-run estimate of the unemployment rate was -0.365557 with a probability value of 0.004, according to Table 6 of section 4.5 of this study. As a result, the study concluded that the unemployment rate was statistically significant and had a negative impact on Nigeria's inflation rate during the study period because the probability value of the estimated unemployment rate's coefficient is less than a 5 percent level of significance.

4.7.2 Test of Hypothesis Two: The total amount of government spending does not significantly affect Nigeria's inflation rate.

In section 4.5 of Table 6, the total government expenditure result showed that the estimated long-run coefficient was 39.950401 with a probability value of 0.0470. As a result, the study concluded that total government spending was statistically significant and positively contributed to the rise in inflation in Nigeria during the study period because the probability value of the estimated coefficient of total government spending was less than a 5% level of significance.

4.7.3 Test of Hypothesis Three: The rate of inflation in Nigeria is not significantly impacted by economic growth.

According to the economic growth results shown in a table in table 6 of section 4.5, the estimated long-run economic growth coefficient was -11.192293 with a probability value of 0.0481. Therefore, the study revealed that the economic growth was statistically significant and had a negative impact on Nigeria's inflation rate during the study period because the probability value of the estimated coefficient of the economic growth was less than a 5 percent level of significance.

5. Discussion

The discussion of the study was made vis-à-vis the objectives of the study as follows below

5.1 Unemployment and Inflation in Nigeria

The investigation of the long-term effects of the unemployment rate on inflation in Nigeria from 1981 to 2022 showed that the unemployment rate was statistically significant and had a negative impact on the inflation rate in Nigeria during the studied period. According to this finding, Nigeria's inflation rate decreased by 0.6 percent for every 1 percent increase in the unemployment rate. The conclusion suggests that unemployment and inflation rates in Nigeria were inversely correlated. But this outcome is consistent with what Felix and Moukhtar (2022), Uche (2019), and Eze et al. found. (2015), but goes against the conclusions of Orji et al. (2015), Ademola and Badiru (2016), and others.

5.2 Total Government Expenditure and Inflation Rate in Nigeria

The study discovered that overall government spending was statistically significant and had a favorable impact on Nigeria's inflation rate during the time under consideration. The outcome suggests that Nigeria's total government spending and inflation rate were correlated. The result was in agreement with those of Chinedu, Daniel, and Ezekwe (2018), Edeme, et al. Obasikene (2017), and others, but they disapproved of his conclusions.

6. Conclusion

Scholars have continued to have conflicting opinions about the connection between unemployment and inflation in the nation. While some studies claimed that the relationship between unemployment and inflation is inverse, others claimed that there is a direct connection between the two. This study looked at how unemployment in Nigeria affected inflation based on this dichotomous claim.

✉Corresponding author: Nwevo Chimezie Nwikpo

E-mail: nwevochimezie@gmail.com

Therefore, the empirical evidence from the ARDL-Bound test analysis showed that unemployment and inflation were negatively correlated in Nigeria during the review period, both in the short and long terms. Additionally, the coefficient of ECM was statistically significant, fractional, and negatively signed, indicating the sign of a return to long-run equilibrium. The following are the long-term effects of unemployment on inflation in Nigeria during the reviewed period:

- (i) In Nigeria, a percentage increase in the unemployment rate over time resulted in a -0.36 percent decline in inflation, and the opposite was true. This suggests that a higher unemployment rate in Nigeria results in a lower inflation rate.
- (ii) The inflation rate in Nigeria increased by 39.9% for every percentage increase in total government spending, and vice versa. To put it another way, higher overall government spending in Nigeria causes higher inflation.

Recommendation

Recommendations were as follows

- (i) For the economy to run evenly and smoothly, the government should make every effort to strike a balance between the unemployment rate and the inflation rate.
- (ii) To prevent a rise in inflation in the nation, the government should reduce spending and direct it toward industries that produce goods and services.

Limitations

Lack of funding was one of the study's limitations, along with inconsistency and discrepancy in the data and materials that were obtained from various sources on the topic. However, the researcher was able to overcome these restrictions by making the best use of the resources at her disposal and by obtaining the accurate data and materials she needed from reputable sources like the CBN statistical bulletin and World Bank dataset.

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✉Corresponding author: Nwevo Chimezie Nwipko

E-mail: nwevochimezie@gmail.com

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