An Econometric Analysis Of Nigerian Unemployment And Inflation: A Vector Error Correction Model

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Abstract: To assess the existence of short- and long-term dynamics between inflation and unemployment in Nigeria, the study employs econometrics techniques such as unit root test, trend analysis, descriptive statistics, cointegration test. This analysis shows that in Nigeria, there is a long-run causal relationship between unemployment and inflation rate. The cointegration results also suggest that inflation and unemployment have a long-run causal effect. The residual test revealed that the models are normally distributed, as the Jarque-Bera normality test also produced positive results. The results also show that there is no serial correlation, heteroskedasticity, or specification error. As a result, the result is credible for prediction and the model specification are well specified. However, this stands in stark contrast to many other developed nations, including the USA, Australia, Canada, and others.

Keywords: inflation, unemployment, Nigeria, econometrics analysis, Philips curve, diagnostic test.

I. INTRODUCTION

The relationship between inflation and unemployment has become a key concern for macroeconomic policymakers ever since Williams Phillip first proposed the Philip's curve in 1958. He examined the relationship between unemployment and wage inflation in the United Kingdom using sample data 1861 to 1957 and found a negative correlation between price fluctuation and unemployment rate in the country. However, a number of studies have found that this relationship is only present in the short run. Some research have disputed the validity of the Philips curve (Friedman, 1968; Lucas & Rapping, 1969), while others (Hooper, 2019; MacLear, 2018) have argued against those findings. A few research have suggested that the trade-off only applies in the short term and not in the long term (Friedman, 1968; Lucas & Rapping, 1969).

Moreover, when an economy reaches point where aggregate demand is equal to aggregate supply, Keynes (1940) thought that inflation is caused by pressures on the demand side. Before the 1970s, Keynesian economists believed that by maintaining inflation at a high but stable rate, the government could achieve a low level of unemployment. They also contended that an increase in unemployment would result in lower income and, as a result, a decline in aggregate output. This notion was largely believed until the 1970s, when economies began to endure widespread high inflation and high unemployment rates. This resulted in the development of the expectation-augmented Phillip's curve. Since Nigeria's return to democracy in 1999, policymakers have sought to reduce employment while keeping inflation in the single digits.

Furthermore, these objectives are far from being met as the country continues to experience high unemployment and inflation. Observations and analysis of data in Nigeria have also shown that the Phillip's curve hypothesis might not be applicable in the country. About 33.3% or 23.2 million out of the 70 million active population is unemployed. The major causes of the increase in Nigeria's inflation rate, according to a think tank in the Africa (Centre for Study Economies of Africa) economic update, include structural and monetary factors. The presence of structural issues such high import dependence and insecurity reduces the efficiency of adjusting the monetary policy rate to manage inflation. In August 2022, the inflation rate increased for the eighth consecutive month to reach 19.64%.

As a result, the Nigerian central bank adopted a hawkish posture as part of a contractionary strategy to lessen the pressures of inflation on the economy. In 2022, the Central

Bank's Monetary Policy Committee increased the benchmark interest rate twice (14% in July 2022 and 11.5% to 13.5% in May). According to figures from the National Bureau of Statistics, Nigeria's inflation increased from 18.60 percent in June 2022 to 19.64 percent in July 2022. Therefore, the goal of this study is to examine the connection between the macroeconomic variables inflation and unemployment using Nigeria as a case study.

II. LITERATURE REVIEW

Economists have been researching the relationship between the two macroeconomic variables for around a century. Irving Fisher wrote on this in some of his first articles (62, 1926). However, it wasn't until 1958 that A. W. Phillips' work generated interest in the subject. Within a short period of time, two further investigations on the topic—one by Robert J. Ball and Lawrence R. Klein and the other by L. A. Dick-M and J. Dow (49, 1959)—were also published (115, 1959). The relationship between the two variables is explained by a number of theoretical frameworks. Additionally, the two terms must be defined clearly for the purpose of this study.

A. CONCEPTUAL FRAMEWORK

a. DEFINITION OF INFLATION

A state of equilibrium is reached when total supply and total demand are equal. However, when the economy is in balance, when total demand exceeds total supply, an inflationary condition occurs. The difference between the expected GDP and the actual GDP, assuming full employment in any given economy, is known as an inflationary gap. Real or Actual GDP - Expected GDP equals the inflationary gap. Inflation is when too much money is chasing after few goods according to Irving Fisher/Milton Friedmasn famous dictum. The term "inflation" is used by economists to describe a persistent increase in the average level of prices expressed in monetary units.
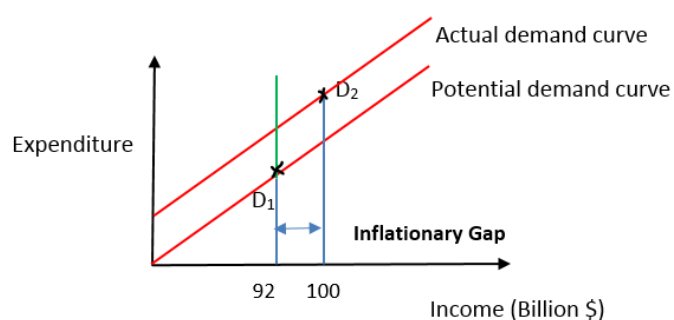

Figure 1.1

The above fig 1.1 show that the Y-axis denotes expenditure, whereas the X-axis indicates national income. The demand curve that corresponds to national revenues is intersected by the blue lines. Observe how the red line, which is $92 billion, is sitting on the blue line. That sector is fully employed. When the overall demand (measured in national income) exceeds the demand at full employment, an inflationary gap is generated, in this case $8 billion. Aggregate demand is the total amount of demand for all final goods and services produced in an economy. A comparison of Nigeria's inflation rate with that of other African nations portrays a very bleak picture. Nigeria has the largest economy on the continent and the most people, with a population of over 206 million. From January to September 2021, the country's inflation rate averaged 17.42%, declining for six months in a row in September. Because a high inflation rate will have unpredictable benefits and losses for both lenders and borrowers.

The national central bank's responsibility is to keep inflation levels stable via tools of monetary policy such open market operations (OMO), interest rates, and bank rates, among others. Because a high inflation rate will have unpredictable benefits and losses for both lenders and borrowers, a modest and stable inflation rate is optimal. The main goal and responsibility of the majority of central banks is to keep inflation rates constant. This is made possible by the central bank's power over the production of new money. The amount of money in circulation, or the money supply, is influenced by them.

b. THEORIES OF INFLATION

Philips Curve

Nobel Prize winner George Akerlof referred to the Phillips theory on inflation and unemployment as "perhaps the single most important macroeconomic relationship" (Mankiw 2019). A. W Phillips is commemorated with the Phillips curve. Williams Phillips is a New Zealand economist who worked as a professor at the London School of Economics. Phillips is most known for propounding the Phillips curve, but he also developed and created the MONIAC (Monetary National Income Analogue Computer). Inflation and unemployment are negatively correlated, according to the Phillips curve. Higher inflation is associated with lower unemployment, and vice versa. The Phillips curve was a concept used to guide macroeconomic policy in the twentieth century, but it was called into question by stagflation in the 1970s. The 1970s stagflation coincided with the first global surge of debt accumulation in the previous half-century.

Philips first illustrated how this function may explain the link for the ensuing era between 1913 and 1957 by fitting a nonlinear function that negatively related wage inflation to the rate of unemployment between 1861 and 1913. He added that this would occur because workers are hesitant to give their services at prices below the going rate when there is little demand for labor and a high percentage of unemployment, causing wage rates to decline gradually. Additionally, when unemployment is low, the pace of pay growth is rapid. However, the Phillips Curve was equally famous for his theory. Although majority of the early research that came after Phillips' initial study concentrated on this stylized relationship between wage inflation and unemployment. To explain any deviation from the idealized loop, Phillips went to great lengths. His theories are noteworthy because they draw attention to structural elements in the labor and commodities

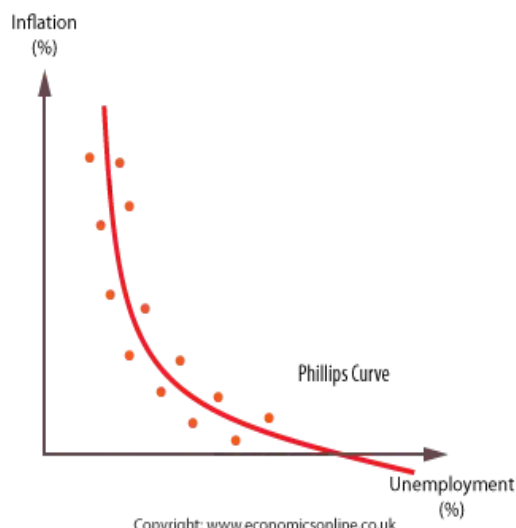markets that run counter to the assumption of perfect competition.

Figure 1.2

Given the trade-off between unemployment and inflation, policymakers may try to influence the rate of economic growth and inflation through demand management fiscal and monetary policy as illustrated in the graph in Fig. 1.2 above. In the case of high unemployment and low inflation, for instance, authorities could boost aggregate demand. Although it would increase inflation, this would aid in lowering unemployment. When there is stagflation, as there was in the 1970s, the Phillips curve appears to collapse (higher unemployment and higher inflation). The Phillips Curve, according to monetarist economists, was incorrect because there was no long-term trade-off between unemployment and inflation. Some contend that policymakers should consider any potential trade-offs between unemployment and inflation and that the Phillips Curve is still relevant today.

c. UNEMPLOYMENT

Nigeria's unemployment issue is complex. There are instances of underemployment where people don't make enough money to cover their basic necessities such as clothing, food, and housing. There are also cases of "disguised unemployment," in which workers take positions beneath their educational and professional qualifications. In Nigeria, a case is when job seekers are unable to locate employment in either the public or private sectors. Since economy crashed in December 2007, various countries, including those with advanced capitalist economies and underdeveloped countries, have seen extraordinarily high unemployment rates. This economic downturn was the longest since World War II.

The Great Recession lasted from December 2007 to June 2009, making it the longest recession after World War II. The Great Recession was notable in various ways beyond its duration. According to Chappelow (2020), unemployment happens when someone who is actively seeking job is unsuccessful in doing so. I should also mention that unemployment is frequently used as a gauge for the state of

the economy. The U.S. Department of Labor Statistics provides additional details on the effects of unemployed on the sector in 2020.

d. THEORIES OF UNEMPLOYMENT

Keynesian Unemployment

Keynes disagreed with the traditional conclusion of full employment in a capitalist economy. Keynesian economics was born during the global depression of the 1930s. There is currently a severe unemployment crisis affecting the entire capitalist world. Keynes now firmly argued that full employment is impossible in a capitalist system. According to Keynes, the current state of full employment is an astrological coincidence. The classical assumption of wage-price flexibility was challenged by Keynes. In the downward direction, money earnings are rigid or inflexible. They are, nevertheless, adaptable in the upward direction.

Wage rigidity can be attributed to two factors. The first is the illusion of money. The second reason is institutional. Trade unions keep wages from decreasing. As a result, any salary reduction will be opposed. Alternatively, the pay rate cannot fall below a specified threshold. However, nothing prohibits money salaries from increasing. Wages may rise once full employment is achieved. This Keynesian argument contends that, unlike the classical economy, the labor supply function is determined by money wages rather than real wages.

✓ liquidity trap
✓ interest inelas-ticity of investment.

Nevertheless, the Keynesian employment concept makes a distinction between maximum economic equilibria and underemployment equilibrium.

B. EMPIRICAL REVIEW

The empirical literature on the relationship among unemployed and inflation is examined in this section of the study. However, it has been recognized that the relationship between the two concepts will be a topic of ongoing research. Moreover, no country in the world, developed or developing, is immune to inflation and unemployment. The following paper will be reviewed for the purposes of this study.

Khanssa, Nasser, & Mourad A (2018). They looked at Lebanon's inflation and unemployment using quantitative study. The correlation among unemployment and inflation in Lebanon from 1993 to 2014 is examined in this research using econometric modeling. The tests use the Phillips curve as a standard. In order to assess the link over the short and long terms, the study employed cointegration, granger causality, and VECM. After discovering that the Philips curve correlation does not hold in Lebanon in the short run, the study finds that there is a one-way causal relationship between unemployment and inflation over the long run rather than one that goes the other way.

Also, Idris, M (2020), Employing annual time period data spanning the years 1986 to 2020, he examines how unemployed and inflation affect gross domestic product in Nigeria. Using the ordinary least squares method, the model

coefficient is examined. According to the study, inflation has a favorable impact whereas unemployment has a major impact on gross domestic product in Nigeria. The study recommended that in order to achieve a high, rapid, and sustainable economic growth, the government and relevant organizations should develop policies to promote self-employment and lower company costs.

Additionally, Orji, A., Anthony-Orji, O. I., & Okafor, J. C. (2015) analyze the relationship between unemployment and inflation in Nigeria by determining whether the original Philips curve hypothesis still holds true in that country. The study used data from the years 1970 to 2011 and a distributed lag model. The findings indicate that the unemployment rate in Nigeria has a positive association with inflation and that it is a significant factor of inflation. The results, however, refute the Nigerian Philips curve concept as originally proposed. As a result, the study recommends that, in order to reduce the threat of inflation and unemployment, as well as the issue of economic stagnation in Nigeria, the economy be diversified and suitable policies enacted by the governments and money authorities.

Moreover, the relationship among unemployed and inflationary in Nigeria from 1980 to 2015 was also studied by Odo, S. I., Elom-Obed, F. O., Okoro, T. O., & Nwachukwu, J. O. (2017). According to the model, unemployment is a result of inflation, the money supply as a proportion of GDP, and total government spending as a percentage of GDP. Causation test, VEC test, and co-integration were the statistical tests that were utilized. In conclusion, the study discovered that: (i) inflation considerably affected unemployment in Nigeria both in the long run and the short run during the time under examination. (ii) The variables in the model have a substantial causal link.

Thus, the effects of unemployment and inflation on gross domestic product in Nigeria are also examined by Ademola, A., & Badiru, A. (2016). The fit of the data for the analysis was assessed using the ordinary least squares method along with a number of diagnostic tests. The results of the diagnostic test show that the data are stationary at the level. There are two cointegrating equations, indicating the existence of a long-term relationship between the real gross domestic product (RGDP), unemployment, and inflation.

III. METHODOLOGY

Trend analysis, statistical analysis, the Augmented Dickey Fuller test, the Philips-Perron (PP) unit root test, the Johansen cointegration test, the VECM modeling, the Causality test, the Residual diagnostic test, and the impulse response function are all used in this research. The relationship between unemployed and inflation has never been estimated in such detail by another study. The data is accessible annually between 1991 and 2019. The World Development Bank Indicators (WDI) database is the source of the information. In the study, unemployment is the variable of interest, and inflation, measured by the consumer price index, is the explanatory variable.

Authors	Topic	Methodology	Variables	Findings	Gap
Khanssa, Nasser, & Mourad, A. (2018)	An econometrics analysis of inflation and unemployment in Lebanon: A vector error correction model	Vector error correction model	Inflation and unemployment	The study shows that Philips curve is not applicable in Lebanon and the VECM demonstrates a one-way relationship between unemployment and inflation	The research study Lebanon, but the current research aims to study Nigeria.
Orji, A., Anthony-Orji, O. I., & Okafor, J. C. (2015).	Inflation and Unemployment in Nigeria: Another test of Philips curve	Unit root test	The dependent variable is consumer price index measure as inflation rate while the independent variables are macroeconomics variables such as budget deficit, interest rate and among others	The findings invalidate the proposition of Philips curve in Nigeria.	The scope of the study is 1997-2011 while the current research is from 1991-2019. Whereas several exogenous variables are introduced but the current research only work with one two variables
IDRIS, M (2020)	Effect of unemployment and inflation on economic growth in Nigeria	Unit root test	Dependent variable is rate of growth while the independent variables are unemployment and inflation	Findings indicate that the coefficient of unemployment has a negative and significant effect on economic growth in Nigeria; while inflation exerts a positive effect. The Nigerian economy is characterized by structural unemployment and cost-push inflation, respectively;	The study only test for the unit root but the current study will test for both the unit root and granger causality test and some others econometrics analysis.
Odo, S. I., Elom-Obed, F. O., Okoro, T. O., & Nwachukwu, J. O. (2017)	Understanding relation between unemployment and inflation	Unit root test, Granger causality test and VECM	The dependent variable is unemployment while the independent variables are money supply, inflation and government expenditure	Inflation significantly impacts unemployment in Nigeria both in the long – run and short – run within the period under review.	The study is scope of coverage is from 1980-2020. While the current research is from 1991-2019.
Ademola, A., & Badiru, A. (2016)	The impact of inflation and unemployment growth in Nigeria	Ordinary least square	The dependent variable is rate of GDP growth rate while the independent variables are inflation and unemployment.	The result of Diagnostic test indicates that data for the analysis are stationary at I (0) and the cointegration imply that there exists long-run relationship between RGDP, Unemployment and inflation in the equation.	The study evaluates the impact relation of unemployment and inflation on GDP while the current research measures the relationship and the causal influence of the two variables on each other. Furthermore, the breadth of the coverage ranges from 1981 to 2014, however the current study has updated the research by expanding it to 2019.

A. TREND ANALYSIS

Displaying a graphical summary of long-term data is aided by trend analysis. It is applied to examine variability at various time intervals and record how the variables change over time. Finding the variability in data sets via trend analysis.

B. DESCRIPTIVE ANALYSIS

The process of arranging, classifying, and manipulating facts in order to offer descriptive information; the conversion of raw data into useful information that is easy to understand and analyze. The calculation, description, and summarization of the gathered study data in a logical, significant, and effective manner are fundamentally the main purposes of the descriptive statistics. In the manuscript's text, tables, or figures, descriptive data are presented quantitatively or graphically. Histograms were utilized in the study to explain certain important details about the data sets and variables.

C. UNIT ROOT TEST

Before estimating the model, a previous diagnostic test called Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) will be used to look into the stochastic time series process characteristics of Nigeria's unemployment rate and inflation rate. In order to prevent false results. The unit root test allows us to avoid difficulties associated with non-stationary time series models.

COINTEGRATION TEST

The Johansen approach and two different test statistics—the trace test statistic and the max Eigen-value test statistic—are utilized to ascertain the quantity of co-integrating vectors. The tests' purpose is to establish how sensitive different variables are to a single average over a specified time frame.

D. VECTOR ERROR CORRECTION MODEL

The Vector Correction Model is a cointegrated VAR model. The Vector Error - correcting Model (VECM) idea, which consists of an error-correction term created from the known (estimated) co - integrating connection and a VAR model of order p - 1 on the variables' differences.

Before using vector error correction modeling, the following requirement must be satisfied:

✓ All the series must be stationary at Integration of order 1 not order 2.
✓ Determination of optimal lag length
✓ Testing for Johansen cointegration test
✓ Identify whether the variables are co integration or no cointegrated.
✓ If the variables of the model are not cointegrated, VECM cannot be perform.

The number of cointegrating vectors is displayed by the cointegration rank in VECM. A rank of two, for instance, denotes the likelihood that two linearly unrelated combinations of the non-stationary variables will be stationary. Any short-term variations among the independent variables and the endogenous variable will result in a steady long-term link between the variables, according to an ECM coefficient that is negative and significant.

E. CAUSALITY TEST

The econometric approach to causality builds explicit models of outcomes whereby the mechanisms driving the choice of treatment are examined and the causes of effects are addressed. It is investigated how treatment outcomes and selection processes interact. It must demonstrate three things in order to establish causality: that X occurred before Y; that X and Y's observed relationship wasn't the result of pure chance; and that X and Y's relationship cannot be explained by anything else.

F. IMPULSE RESPONSE FUNCTION

An impulse-response function shows how a variable of interest changes over time after receiving a shock at a specific point. A vector autoregressive model's variable interaction can be studied using impulse response functions. They show how the variables react to systemic shocks. However, it is not always obvious which shocks should be included when studying particular economic issues.

IV. DISTRIBUTION OF DATA

The time series is examined before doing the formal unit root test since this may indicate the variables' stationarity or integrating character. The unemployment rate (Fig. 1.1) exhibits a discernible structure of trend and dynamical fluctuation over time. This suggests that the unemployed means and variances have a propensity to change over time. The same holds true for fig. 1.2. Additionally, both the skewness and the kurtosis diverge from zero and three, respectively. Again, a visual examination of the unemployment and inflation data in Figures 1.3 and 1.4 reveals that none of the variables have the bell-shaped distribution that denotes normalcy.
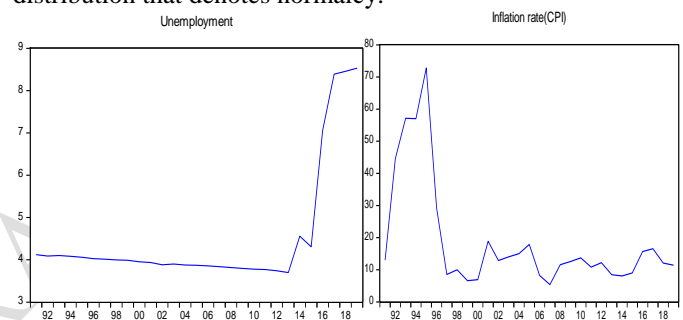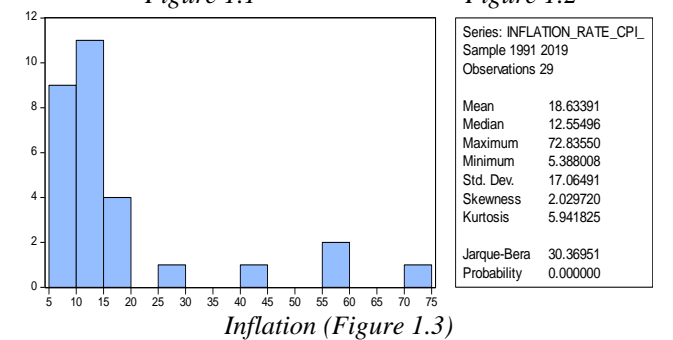

Figure 1.1   *Figure 1.2*

| Series: INFLATION_RATE_CPI_ |
| Sample 1991 2019 |
| Observations 29 |

Mean	18.63391
Median	12.55496
Maximum	72.83550
Minimum	5.388008
Std. Dev.	17.06491
Skewness	2.029720
Kurtosis	5.941825
Jarque-Bera	30.36951
Probability	0.000000

Inflation (Figure 1.3)

| Series: UNEMPLOYMENT |
| Sample 1991 2019 |
| Observations 29 |

Mean	4.534862
Median	3.990000
Maximum	8.530000
Minimum	3.700000
Std. Dev.	1.483410
Skewness	2.132364
Kurtosis	5.780734
Jarque-Bera	31.32046
Probability	0.000000

Unemployment Figure 1.4

A. UNIT ROOT TESTS

Prior to verifying the estimate from the Vector error correction model. Every series needs to stationary at I (1), not

I (II). This will make it easier to choose the best lag length and run the Johansen cointegration test. Data that differs from one another becomes stable, exhibiting constant means and removing the possibility of erroneous regression. Table 1 shows the outcome for the stationarity test performed on each variable used to explain the models using ADF and PP approaches.

Variables	ADF TEST	PP TEST	Order of Integration
	H0: Variables is not stationary	H0: Variables is not stationary	
ΔUNEM	0.0000***	0.0065***	I (1)
ΔINF(CPI)	0.0021***	0.0006***	I (1)
1%	8.366049	4.339330	
5%	3.622033	3.587527	
10%	3.248592	3.229230	

Table 1: Unit Root Test Result

The symbols *, **, and * denote significance at the levels of 1%, 5%, and 10%, respectively. This indicates modifications. Given asymptotic significant values that were lower than the significant values of ADF and PP, Table 1 showed that the variables are stable at level. The variables all become stable at an integration of order after being changed to their initial difference, therefore I (I)

DETERMINATION OF LAGS

As proposed by (Stock and Watson, 1993), the Vector error correction model is sensitive to the number of lag order. For the purpose of this study SC values will be chose.

Lag	Log L	AIC	SC	HQ
0	-145.8188	11.82550	11.82550	11.85255
1	-112.7897	9.503175	9.503175*	9.584310
2	-112.2623	9.780988	10.26854	9.916213
3	-111.7484	10.05987	10.74244	10.24919
4	-96.48862	9.159089*	10.03668	9.402496*

Table 2: Lag-order selection criterion

From the above table 2, the optimal lag is the one with the lowest value as stated by each criterion. For the purpose of this study the AIC lag order selection criteria will be selected which is at lag 4.

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	0.05 Statistic	Critical value	Prob
None*	0.902067	59.13632	15.49471	0.0000
At most 1	0.131111	3.372950	3.841466	0.0663

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

None*	0.902067	55.76337	14.26460	0.0000
At most 1	0.131111	3.372950	3.841466	0.0663

Table 3: Johansen-Juselius Cointegration Test Trace and Maximum eigenvalue test

The table above is used to determine whether unemployment and inflation in Nigeria are correlated. i.e., whether the two variables have a long-term relationship. Table

3 above demonstrates that the trace test and max eigenvalues test between UNEM and INF show that they are cointegrated at the 0.05 level. This indicates that the hypothesis was rejected at a 0.05 level.

UNEM	INF
1.00000	-0.032048
	(0.00226)

Table 4: Normalization

In the above table 4, the UNEM which denotes as unemployment is positioned as dependent variable. Moreover, In the long run, the INF (inflation) has a positive impact on unemployment and ceteris paribus. Moreover, the coefficient is statistically significant at 1% because the standard error is clearly above 2. As a result, in the model, the null hypothesis of co - integration test is accepted over the variant of a co - integrating relationship. Furthermore, the inflation rate is related to increasing unemployment rate. Inflation is anticipated to raise the unemployment rate by 3.2%. As a result of cointegration thus, will proceed to estimate the Vector error correction model.

VECTOR ERROR CORRECTION MODEL

Since cointegration has been established, the vector error correction model can now be used. To ensure stationarity, the dataset utilized in this study was transformed to their first difference. But the first variations wouldn't provide a clear picture of the factors' long-term relationship. This implies that levels should also be utilized with the variables. This suggests that levels should be used in conjunction with the variables. The model is assume that it will be convergent to long-run equilibrium if the error correction term's value is negative and between "0 to 1." The annual rate of adjustment is also mentioned in the value. This problem can be solved by utilizing an error correction model, which considers variables at both the level and first differences. The vector error correction model illustrates how changes in the variable over successive periods are impacted by departures from the long-run relationship. The model also responds to both short run changes in variables and equations.

The below illustrates the VECM empirical models used in this investigation.

Unemployment = $\propto$ + λZt − n + $\Sigma\beta$1ΔInflationt-n + μt (1).

Where β1 is a variable of the exogenous, zt-n is the coefficients of the error correction, and is the constant intercept, t is the error term. The cointegrated equation's coefficient shows how quickly the adjustment to long-run equilibrium would take place. Lag 4 model is the outcome of the Akaike information criterion (AIC)'s optimal lag length criteria.

Regression Coefficients	Equation 1 D (Unemployment)	Equation 2 D (Inflation rate)
ECT-1	-0.000499 (0.00068)	-0.028144 (0.01128)
D (UNEM (-1))	0.203849 (0.20282)	-1.015069 (3.37212)
D (INF (-1))	0.203849 (0.01033)	0.276374 (0.17181)

CONSTANT	0.131886 (0.12309)	-1.057060 (2.04647)
R Squared	0.071832	0.227414
Adjusted R squared	-0.049233	0.126642
F statistics	0.059333	2.256722
Sum square. residual	8.748192	2418.290
Akaike Information Criterion	9.776025	
Schwarz Criterion	10.25596	

The lagged error correction term (ECT-1) for each equation in the preceding table, along with the corresponding probability value in brackets, is the coefficient of interest. The current period corrects the preceding year's departure from long-run equilibrium with an adjustment speed of -0.000499 at 0.04%. Additionally, the data illustrates that, in the short term, ceteris paribus, a percentage rise in inflation is correlated with an average increase in unemployment of 0.3%. Each of these is viewed as having a ceteris paribus effect. The equation below is another way to express this. coefficient is significant at 0.05 level

$ECT_{t-1} = 1.000000 UEMP_{t-1} + 10.92570 INF_{t-1} - 213.1963$ (the cointegrating equation and long run model).

$\Delta UNEM = -0.000499 ECT_{t-1} + 0.203849 \Delta UNEM_{t-1} + 0.003733 \Delta INF_{t-1} + 0.131886$

Result of the Diagnostic Test

Test	Probs
VEC Residual Serial Correlation LM test	(0.4987)
Jarque-Bera (Joint)	(0.2194)
Heteroskedasticity	(0.3415)
Ramsey test	(0.6411)

The results of the Jarque-Bera normality test supported the findings of the aforementioned residual diagnostic tests, which demonstrated that the residuals in the model are normally distributed. The outcome also demonstrates that serial correlation is absent, along with heteroskedasticity issues and specification errors. As a result, we draw the conclusion that the results are reliable and the model was well-defined.

IMPULSE RESPONSE FUNCTION

The impulse response function describes how a dynamic system responds to an impulse, which is a brief external change or input signal. The impulse response relationship between inflation and unemployment is shown in Figure 1.5. In other words, over a specific time period, a standard deviation increases in inflation results in a sizable increase in unemployment. This explains how exogenous variable inflation affects unemployment at various points in time.

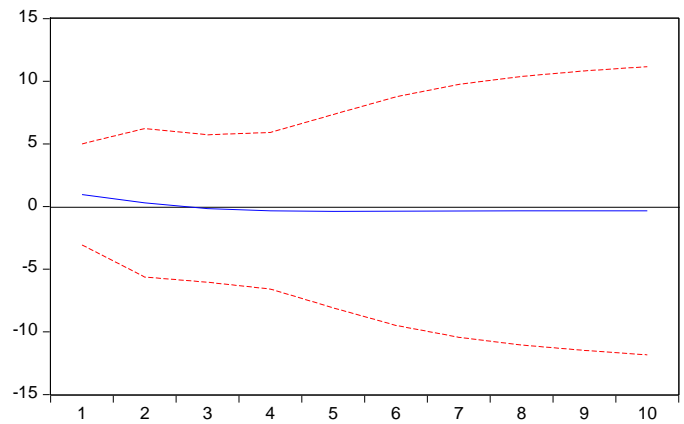Response of INFLATION_RATE_CPI_ to Cholesky One S.D. UNEMPLOYMENT Innovation

Figure 1.5

V. CONCLUSION

A vector error model approach was used to evaluate the econometric analysis of inflation and unemployment in Nigeria from 1991 to 2019. The report also discusses how the Philips curve is used in Nigeria. The study used an error correction model to analyze the model that was stated in the study after examining the time series properties as well as the long run relationship between the two variables used in the model. The outcome of the error correction model demonstrates a favorable link between inflation and unemployment. This goes against the Philips curve's finding that the link between the two maco economic variables. The Philips curve is not applicable in Nigeria.

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