



Unemployment and inflation in developing nations: Implications on poverty rate in Nigeria: 1990 -2021

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Abstract

The study examined unemployment and inflation in developing nations: implication on poverty rate in Nigeria:1990 -2021 using secondary time series data which cuts across 32 years spanning from 1990 to 2021. Research data originates from WDI and UNDP sources providing information about POVINDEX, UNER, INFR, and GDP. The Augmented Dickey-Fuller (ADF) Unit Root test revealed that all variables exhibit mixed integration orders that includes first and zero levels (I(1) and I(0)). The appropriate approach for analyzing cointegration in such cases uses the ARDL bound test for cointegration. The assessment of cointegration showed that the selected variables demonstrate a permanent association throughout time. The results show that the F statistic value of 3.715589 exceeds all lower and upper critical levels which indicates the variables demonstrate a long-term statistical relation. The study confirms negative significance for error correction elements through $cointEq(-1)$ which comes out to -0.992168. The estimated model reveals a 99.21% level of self-adjustment through the ECM results. ARDL techniques produced estimated results indicating that unemployment rate along with inflation rate and gross domestic product growth rate negatively affected poverty rate in Nigeria during the long-term period. The poverty rate in Nigeria experienced positive and significant relationships with the unemployment rate and gross domestic product growth rate while showing negative and significant associations with inflation rate in the short term as revealed by empirical evidence. The study thus recommends that the government should develop and execute comprehensive employment generation programs to address high unemployment rates and alleviate poverty among vulnerable populations as seek to improve and sustain increased gross domestic growth rate in Nigeria.

Keywords: Unemployment, Inflation, Poverty, Developing Nations, Nigeria, ARDL

Introduction

Unemployment, inflation, and poverty are not peculiar to Nigeria alone but they are global macroeconomic problems. Inflation, defined as a sustained increase in the general price level, is driven by rising in energy cost, production cost, excess money supply, supply shortage, aggregate demand exceeds supply, disruptions in global supply chains, and many others (Baumeister & Kilian, 2016) while unemployment is generally perceived as a lack of jobs, economists view it as the proportion of the workforce without employment opportunities, yet possessing the capability, willingness, and qualifications for work. Contrarily, poverty is a state of deprivation characterized by a dearth of resources and access to the most basic necessities for a healthful lifestyle. It encompasses multiple dimensions, extending beyond just income, to include aspects such as education, healthcare, housing, sanitation, and overall well-being (Akomolafe, Agunbiade & Ndayako, 2018; World Bank, 2021).

Many nations, irrespective of their economic advancement, grapple with maintaining stable levels of employment and controlling inflation. From Europe to Asia, countries confront the multifaceted challenges of managing labor markets and preserving price stability in the face of dynamic economic shifts. African historical and structural factors enhance the challenges of unemployment, inflation, and poverty within the African continent. There are various African countries which are simultaneously grappling with unemployment, rising in goods and services prices in order to curb poverty rate.

Such efforts are important in order to alleviate living standards, strengthen social stability and realize burgeoning population's aspirations.

The poverty issue in Nigeria is evidently exacerbated by the two primary macroeconomic factors, inflation and unemployment, (AdelowokanMaku, Babasanya, and Adesoye (2019). According to the National Bureau of Statistics (NBS) (2023), the primary factors contributing to the increase in the poverty rate in Nigeria were inflation and unemployment. Nigeria's unemployment and inflation has become a matter of concern, as it negatively impacts the stability of the nation on the economic status, social wellbeing, and future of the nation's development (Moghalu & Ude, 2023). A major paradox of current times is that despite respectable rates of economic growth, unemployment rates are high and inflationary pressures are persisting. The priority of understanding this paradox requires an understanding of how the economic challenges intersect and contribute to the persistence of poverty in order to realize the sustainable development goals (Egunjobi, 2014).

Additionally, the interaction of unemployment, inflation, poverty in Nigeria remains under developed and tends to yield fragmented policy responses with less likely success in resolving the root causes of these problems. Nigeria is blessed with an abundance of human and natural resources, but unemployment continues to persist, preventing people from getting at the productive opportunities and economic prosperity to which they otherwise would be entitled. Inflation also reduces the purchasing

power of households most especially when they are in poor economic position, thereby increasing poverty levels and widening the gap among the rich and the poor (Aminu et al 2012; Nnachi& Ugochukwu, 2023).

Among such challenges mentioned, the linkage between these goes beyond economical domains as the interaction is widespread: it touches on social cohesion, on political stability, and on the overall human well-being. Forestalling the implications of the currently high unemployment, inflation and poverty levels in Nigeria is the case that the current state of affairs calls for research that deliberates on the nexus of their causations and implications to the nation's socioeconomic development. The research is divided into five sections; the first section talks about the introduction and second section is related to the literature and theoretical framework of the study. Section three deals with materials and methods. In the fourth section the analysis and the discussion of the results is done and fifth section concludes with recommendations for the study.

Literature and Theoretical Framework

Theoretical Framework

Some of the theories that can be employed to look into the bearing effect of unemployment and inflation upon poverty are several. The theoretical realities presented offer valuable points of view from which to comprehend the varied interplay by which economic elements function. According to the human capital theory, education and skill investment has to be invested in to counter unemployment and inflation. According to the structuralist theory, the economic structure determines the

dynamics on the labor market. The dependency theory helps in understanding how external dependencies influence the instability and poverty. Nevertheless, the theoretical framework for understanding the intricate relationship between unemployment, inflation and poverty in the case of Nigeria is based on the Phillips Curve and the human capital theory. The interplay between inflation and unemployment is elucidated when these concepts are applied to the dynamics of poverty in Nigeria.

In 1958, A.W. Phillips proposed the Phillips Curve, which posits that inflation and unemployment are inversely related. According to the inference, inflation is increasing and unemployment is low. Extensive literature had been devoted to discussing this concept, and this has a bearing on the possibilities of poverty in Nigeria being affected by unemployment and inflation. When unemployment rises in particular, and especially among the marginalized populations, the downward pressure on wages can release some of the pressure on inflationary pressures. On the contrary, during times of low unemployment, increased wage demands may possibly unleash inflation. These fluctuations in inflation can subsequently affect the purchasing power of individuals and risk of being stuck or not falling in poverty with unemployment rates.

According to the human capital theory, first proposed by Gary Becker, the central issue is the education and support for future teacher skill development in raising people's productivity and ability to find employment (Becker, 1964). Education and training investment contributes to accumulation of

human capital which makes an income and better employment prospects. This theory is applied towards the Nigerian condition to how unemployment and inflation contribute to the dynamics of poverty. Unemployment rates high can serve to restrict individuals' ability to access higher quality education and skill development opportunities for human capital accumulation. Also, the effects of inflation in terms of eroding real wages can devalue investments in education and skills disposal especially among the low-income people. It could simply perpetuate poverty cycles by supporting people from staying in poverty from not being able to get out of poverty, not being able to climb to a higher rung where they can support themselves and have money for the future for education or whatever else.

Empirical Review

Research shows that much has been done concerning unemployment and inflation effects on poverty in Nigeria in recent years. Studies have also found that unemployment and inflation have a great impact in the poverty of Nigeria. That is why as unemployment and inflation go up, poverty also goes up. The following is a summary of studies conducted in this regard: Musa, Zoramawa, and Shember (2024) examined the influence of inflation and unemployment on the human development index and poverty reduction in Nigeria, utilizing annual data from 1991 to 2023. Data analysis was conducted using an autoregression (VAR) model. In addition to illustrating the existence of both short-term and long-term equilibrium relationships among the model's variables, the analysis' results indicate that a one-unit shock

to inflation results in an increase in poverty and unemployment, as well as a reduction in public expenditure on healthcare and education, as indicated by the impulse response functions. According to the variance decomposition, inflation has a negative impact on numerous aspects of the economy, such as excessive unemployment and destitution, because it inhibits human development.

Ekpeyong (2023) employed the NARDL framework to analyze the variables that contribute to poverty in Nigeria, employing both short- and long-term estimates. According to empirical evidence, the short-term dynamics of poverty in Nigeria include inflation, unemployment (both positive and negative), and population growth. Negative disruptions, such as population growth, unemployment, and inflation, have little long-term impact on poverty. In contrast, it is evident that the reduction of poverty is correlated with an increase in economic activity, as evidenced by GDP growth.

In an effort to ascertain the influence of inflation on poverty and human development in Turkey, Jülide and Cüneyt (2022) employed the ARDL model. Inflation and human development are interdependent, and the research confirmed that they would advance simultaneously over time. Consequently, it assessed the long-term relationship between inflation and poverty and identified both positive and negative correlations.

Poverty in Nigeria was the subject of an investigation by Aderounmuet et al. (2021), they found out that inflation makes people poor faster, and unemployment makes it

worse. Government spending on economic growth and poverty alleviation rises, putting low-income people out of work and making inflation a permanent fixture in their lives.

Ngwu et al. (2021) conducted an Autoregressive Differenced Lag (ARDL) estimate to examine the relationship between the variables in the construction sector and the poverty rate and unemployment rate in Nigeria, as it is evident that there is no long-term balanced relationship between the unemployment rate and the variables in the construction sector. Despite the absence of a long-term correlation between poverty, growth, and unemployment in Nigeria, Ilugbusi, Ajala, Nkire, and Ojo (2019) discovered a statistically significant negative correlation between unemployment and growth. Adelowokan et al. (2019) also did not observe a strong correlation between economic growth and poverty. Consequently, it is imperative to reevaluate the impact of inflation and unemployment on Nigeria's poverty rate.

Materials and Methods

Research Design

The analysis of how unemployment and inflation influence poverty in Nigeria can be studied through multiple econometric

assessment methods. The study employs Auto Regressive Distributed Lag (ARDL) methodology because it delivers the most appropriate method for time series analysis and effectively captures dynamic short-term together with sustained long-term relationships. The ARDL method was also supported by researches like Banerjee et al. (1998) and Bicudo and Azu (2018) to identify its accuracy of parameter estimation and dynamic inter relationships (Gujarati & Porter, 2009; Hansen, 1992). Therefore, the secondary time series data available for 32 years' period (1990 to 2021) was used in the study. UNDP and world Development Indicators (WDI) were used in data of Poverty Rate (POVINDEX), Unemployment Rate (UNER), Inflation Rate (INFR) and Gross Domestic Product Gross Rate (GDPGR).

Model Specification

The study adapts Ademola & Badiru (2015) and Wosu & Ezekwu (2024) models while the model for this study is specified as follows:

$$\text{POVINDEX} = \beta_0 + \beta_1 \text{UNER}_t + \beta_2 \text{INFR}_t + \beta_3 \text{GDPGR}_t + \mu_t$$

The ARDL model is specified as:

$$\begin{aligned} \Delta \text{POVINDEX} = & \phi_0 + \sum_{j=1}^m \phi_{1j} \Delta \text{POVINDEX}_{t-j} + \sum_{j=1}^m \phi_{2j} \Delta \text{UNER}_{t-j} + \sum_{j=1}^m \phi_{3j} \Delta \text{INFR}_{t-j} \\ & + \sum_{j=1}^m \phi_{4j} \Delta \text{GDPGR}_{t-j} + \theta_1 \text{UNER}_{t-1} + \theta_2 \text{INFR}_{t-1} + \theta_3 \text{GDPGR}_{t-1} + \theta_4 \text{ECM}_{t-1} + U_t \end{aligned}$$

Where:

POVINDEX = Poverty level at time t

UNER = Unemployment rate at time t

INFR = Inflation rate at time t

GDPGR = Control Variables: Gross Domestic Product growth rate at a time t

μt : Error term

t : Time period

β_0 : Intercept

$\beta_1, \beta_2, \beta_3$: Parameters to be estimated

$\phi_1 - \phi_4$ = short run Coefficients of ARDL Model

$\theta_1 - \theta_3$ = long run coefficients of ARDL_ECM

θ_4 = ECM Coefficients that measures the speed of adjustment

A Priori Expectation

Theoretical economic predictions form the basis to establish several propositions. Reduction in unemployment rate ought to negatively impact poverty levels according to theoretical expectations. Similarly, β_2 may be expected to have a positive sign on poverty rate, suggesting that higher inflation rates correspond with higher poverty levels, and β_3 is expected to be negatively signed, increase in economic activities should bring about reduction in poverty rate in Nigeria.

Data Measurement

Unemployment and inflation rates are measured in percentage values, representing the proportion of the labor force unemployed and the rate of change in consumer prices, respectively. Poverty indicators may be presented as ratios or indices, reflecting the extent of poverty within the population while GDPGR represents overall economic performance measure in percentage.

Pre And Post Estimation Test

Unit Root Test

Prior to time series analysis, the unit root analysis serves as an essential pre-step that enables required estimation of data. Unit root testing determined the appropriate action for trending data because it needed to be either first differenced or fitted to deterministic time functions. The ADF test determined the maximum order of integration for series including POVINDEX, UNER, INFR and GDPGR as per the principles set forth by Dickey & Fuller in 1979 and 1981.

The research examined variable interdependence structures with Granger causality methods in addition to conducting serial correlation (test for autocorrelation), heteroscedasticity test, and normality test (Granger, 1969; Gujarati & Porter, 2009; Hansen, 1992).

Data Analysis and Discussion of Results

This section shows the analysis of empirical data collected during the study. Two sections form the research: preliminary estimation followed by post-estimation. The study reported its findings from Granger causality and Autoregressive Distributed Lag (ARDL) estimation methods.

Summary Statistics

Table 1: Descriptive Statistics

	POVINDEX	UNER	INFR	GDPGR
Mean	58.31969	4.119750	18.06084	4.320114
Median	59.35000	3.899000	12.70720	4.430627
Maximum	71.50000	5.999000	72.83550	15.32916
Minimum	40.10000	3.700000	5.388008	-2.035119
Std. Dev.	9.524878	0.602169	16.36508	4.017196
Skewness	-0.298911	2.126475	2.170086	0.435426
Kurtosis	1.971746	6.488597	6.633360	3.286568
Jarque-Bera	1.886262	40.34386	42.71787	1.120671
Probability	0.389407	0.000000	0.000000	0.571017
Sum	1866.230	131.8320	577.9468	138.2437
Sum Sq. Dev.	2812.422	11.24083	8302.294	500.2737
Observations	32	32	32	32

Source: Author's Computation from Eviews 10.0, 2023.

The statistics used in this empirical study are highlighted in Table 1. From the table, the mean values of unemployment rate (UNER) is the lowest and poverty rate (POVINDEX) the highest with values of 4.119750 and 58.31969 respectively. Furthermore, research established the mean values of inflation rate (INFR) as 18.06084 while gross domestic product growth rate (GDPGR) stood at 4.320114. The standard deviation resulted as INFR (Standard Deviation: 16.36508 with the least standard deviation of 0.602169. All

the variables exhibit positive skewness according to the skewness statistic results which indicates they are skewed to the right side of the distribution and kurtosis statistic results show they have platykurtic characteristics. In case of skewness, the value of the variable closest to zero is the benchmark for the = symmetry for kurtosis when the variable is three the variable is called mesokurtic and if the variable is lesser than it is called platykurtic. Hence, POVINDEX is platykurtic.

VAR Lag Order Selection Criteria

Table 2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC
0	-313.6833	NA	38476.04	21.90919
1	-249.3027	106.5609	1387.150	18.57260
2	-227.1129	30.60662*	971.5225*	18.14572*

3	-219.1071	8.833909	2037.855	18.69704
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* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

According to Table 2, how to select the number of lag(s) before ARDL test was performed considering that the number of lag(s) to include in the model was optimum lag order. The model was selected with the maximum lag where five different information criteria had been used. The Table 2 shows that from the two lags, LR, FPE and AIC agreed. Thus, for the model, 2 lags were considered as the maximum.

Correlation Matrix

Here correlation coefficient is the linear association or relationship between explanatory and explained variables. Pearson(r) or linear or product moment correlation is the most frequently used type of correlation coefficient. The Pearson correlation of two tailed significance is used to get the correlation values.

Table 3: Correlation matrix

VARIABLE	UNEMPLRATE	INFLATNRATE	POVRTYINDX	GDPGR
UNEMPLRATE	1.0000			
INFLATNRATE	0.1239	1.0000		
POVRTYINDX	0.6712	0.0215	1.0000	
GDPGR	-0.6829	0.0056	-0.8310	1.0000

Source: Author's Computation using E-views 10.0 software, 2023.

These correlation matrixes throw some light on the relations between other variables being discussed. The matrix contains each value, which represents the correlation coefficient between pairs of variables, how closely their values associate with one another. There is a noteworthy positive correlation of approximately 0.6712 between the unemployment rate and the poverty index. This indicates that regions with higher unemployment rates tend to experience higher poverty levels. This positive correlation aligns with the intuition that economic challenges like unemployment can contribute to higher poverty rates. The

economic growth (GDPGR) percentage exhibits a significant negative correlation of around -0.6829 with the unemployment rate. This suggests that areas with higher levels of GDPGR tend to have lower unemployment rates. This finding underscores the potential role of improved economy to create job opportunities. The inflation rate and poverty index demonstrate a very weak positive correlation of approximately 0.0215. This implies that there is limited evidence of a direct relationship between inflation and poverty levels in this dataset. Other factors beyond inflation might contribute more significantly to changes in poverty. The

correlation coefficient between the inflation rate and GDPGR percentage is quite close to 0 (around 0.0056), indicating a minimal linear relationship between the two. This implies that changes in the inflation rate are not strongly associated with changes in GDPGR within the given dataset. Notably, GDPGR percentage displays a substantial negative correlation of roughly -0.8310 with the poverty index. This indicates that areas with

higher GDPGR percentages tend to have lower poverty levels.

Unit Root Test

Generally, for econometric estimation of a model using time series data, it is known that the series should be stationary as a non-stationary series usually yield misleading inference. Therefore, prior to the model estimation a unit root test was carried out.

Table 4: ADF Unit Root Test Result

VARIABLES	ESTIMATES		I(d)
	t-stats	Prob	
POVINDE	-6.51643*** ^(a)	0.0000	I(1)
UNER	-5.00938*** ^(b)	0.0018	I(1)
INFR	-4.51179*** ^(a)	0.0012	I(1)
GDPGR	-3.62563*** ^(a)	0.0109	I(0)

Source: Author's Computation 2023, using Eviews 10.0

Note: i(d) indicates respectively the order of integration; a = test equation only with intercept; b = test equation only with trend and intercept. ***, **, * imply 1%, 5% and 10% significance levels respectively.

The Table 4 shows the t-statistic value for testing the null hypothesis that the variable possesses a unit root. The schwartz information criterion (Shwartz, 1987) is used in the lag length selection. The unit root tests result revealed that POVINDE, UNER and INFR are stationary after first difference. However, UNER is stationary under intercept and trend whereas, POVINDE and INFR is shown to be stationary under constant without trend at 1% level of significance respectively. The GDPGR dataset has level stationarity when using an intercept. These results demonstrate variables are integrated of mix order which serves basis to use ARDL.

The following analysis within the research estimates a bound cointegration test to prove potential long-run relationships in the model existence.

ARDL Bound Test Estimation Result

Table 5 presents the co-integration test result. Our variables show co-integration and an ARDL model is available for analysis to check for equal data association as well as determine variable relationships through an F test of Wald value assessment. The model evaluates F test value against upper bound critical values to determine acceptance of a long run relationship.

Table 5: ARDL bound test estimation result

Model For Estimation	F-Statistics	Significance Level	Critical bound F-Statistics	
			I(0)	I(1)
GDPGR=f(POVINDEXT, UNERT, INFR, GDPGR)	3.715589	1%	3.65	4.66
		5%	2.79	3.67
		10%	2.37	3.2

Source: Author's Computation using E-views 10.0 software, 2023

The results from Table 5 reveal that the F statistic estimates 3.715589 exceeded its upper critical bound according to ARDL Co Integration. The F Statistics computation shows no relationship between these variables when it exceeds the minimum threshold. A finding of the long run relationship requires F-statistics to fall beneath the upper bound limit. The analysis result turns out to be undetermined when the calculated F-statistics

lies within the established boundary range. Table 5 represents the results obtained through the bound Co-integrated test. Results demonstrate how the null hypothesis faces rejection at a 1% as well as 5% and 10% significance level. The obtained value of F Statistics exceeds both lower and upper critical boundary figures established at 5% and 10% significance levels. Based on 5 % and 10 % level of significance the model variables establish a long-term relationship.

ARDL Result

Table 6: Long-run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(UNERT)	-1.724535	0.477580	-3.610987	0.0016
LOG(INFR)	-0.125898	0.041179	-3.057302	0.0060
GDPGR	-0.017138	0.009208	-1.861292	0.0768
C	6.836051	0.657138	10.40277	0.0000

Source: Author's Computation using E-views 10.0 software, 2023

The results in Table 6 revealed long run estimated results, the coefficient of UNERT, INFR and GDPGR are negatively related to POVINDEXT. However, it is UNERT and INFR that portrayed statistical significance. The result therefore implied that, 1% increases in UNERT, INFR and GDPGR in the long run, will lead to a fall in POVINDEXT by 172.45%, 12.59% and 1.71% respectively. However, it is GDPGR that is in conformity

with a priori expectation. That is, an increase in GDPGR will lead to significant decrease in POVINDEXT in Nigeria in the long run. The divergence from a priori expectation for UNERT and INFR with poverty rate is contributed by government's weak macroeconomic policies. Sometime, people who lost their jobs may be receiving unemployment benefit or welfare programmes that is even higher than their

incomes while working. Technically, they are unemployed (which will increase unemployment statistics) but in reality, they receive financial support than they did while working. This will lead to rising in unemployment rate while poverty rate falls. The studies by Mansi, Hysa, Panait and Voica ARDL Short-run Coefficient Estimation

(2020) showed that unemployment triggered increased poverty within both Western Balkan countries and European Union territory. Cüneyt & Jülide (2022) discovered that inflation rates had positive significant effects on poverty numbers.

Table 7: Error Correction Estimation for Estimated ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(UNER(-1))	4.826533	1.779198	2.712758	0.0130
D(GDPGR)	-0.002445	0.009357	-0.261257	0.7964
D(GDPGR(-1))	0.019910	0.008491	2.344937	0.0289
CointEq(-1)*	-0.992168	0.211611	-4.702829	0.0001
R-squared	0.9756			
Adjusted R-squared	0.8171			
Durbin-Watson stat	2.0047			

Source: Author's Computation using E-views 10.0 software, 2023.

The results for the short run dynamics coefficients from the estimated ARDL model are in reported in Table 7. From the Table, the ECM (-1) is estimated to be -0.109601 which is significant at 5% level of significance and negative (Range between zero and 1) as is expected since the probability less than 5% (number: 0.0001). The result confirms the short run relationship/co integration in these variables. The feedback coefficient -0.109601 indicates that 10.96% of previous year's shocks will shift toward long run equilibrium during the current year.

The result further showed a positive and significant relationship between UNER and INFR with POVINDEX in their first lagged periods respectively. This result is consistent with a priori expectation. The results from this study thus implied that if UNER and INFR

shoots up by 1%, poverty rate (POVINDE) in Nigeria will skyrocket by 482.65% and 01.99% respectively in the short run in Nigeria. This result is in conformity with the study of Mansi, Hysa, Panait and Voica (2020), Aderounmu *et al* (2021) among others who asserts that as unemployment and inflation increases, poverty also increases. Hence, they concluded that the government's economic policies have contributed to the increase in unemployment and poverty in Nigeria which is proven by the persistence of poverty in Nigeria till this very day.

Further statistical inference showed that, the value of R-squared and Adjusted R-squared co-efficient of multiple determinations stood at 0.975614 and 0.817171 respectively. This implies that 97.56% of variation in poverty rate (POVINDE) in Nigeria is explained by

the variation in all independent variables, while the remaining per cent is accounted for

by the error term (e_t). The high value of R-squared shows that the model is a good fit.

ARDL Diagnostic Test

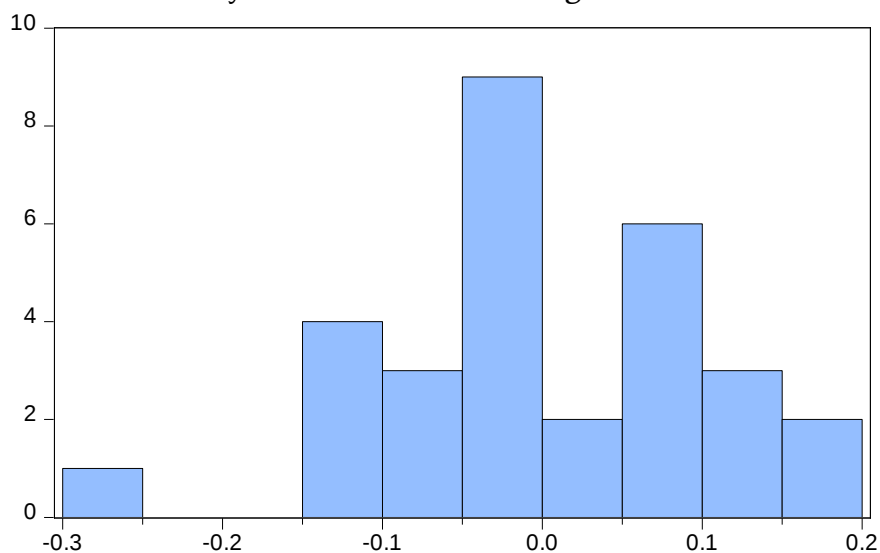
Table 8: Diagnostic test result

Test Statistics	Chi-square/LM Test	Probability Value
Serial Correlation	0.24331	0.3109
Functional Form	0.8847	0.7504
Normality	0.5973	0.7418
Heteroscedasticity	0.44633	0.3581
CUSUM and CUSUMQ	Stable	

Source: Author's Computation from E-view 10.0, 2023

The Table 8 displays post-ARDL estimation diagnostic findings for serial auto correlation and heteroscedasticity and model linearity results. The Breusch-Godfrey Serial Correlation LM Test results in a p-value higher than 0.05 at 5% significance which indicates no existence of serial auto correlation in the model. At 5% level of significance the model maintains homoscedasticity because the Beusch-Pagan-

godfrey heteroscedasticity test p-value exceeds 0.05. The research analyzed a diagnostic test presented in the above table to validate the efficiency and consistency of our model. The time series parameters passed successfully in the model analysis including serial autocorrelation and both heteroscedasticity and normality.



Series: Residuals
Sample 1992 2021
Observations 30

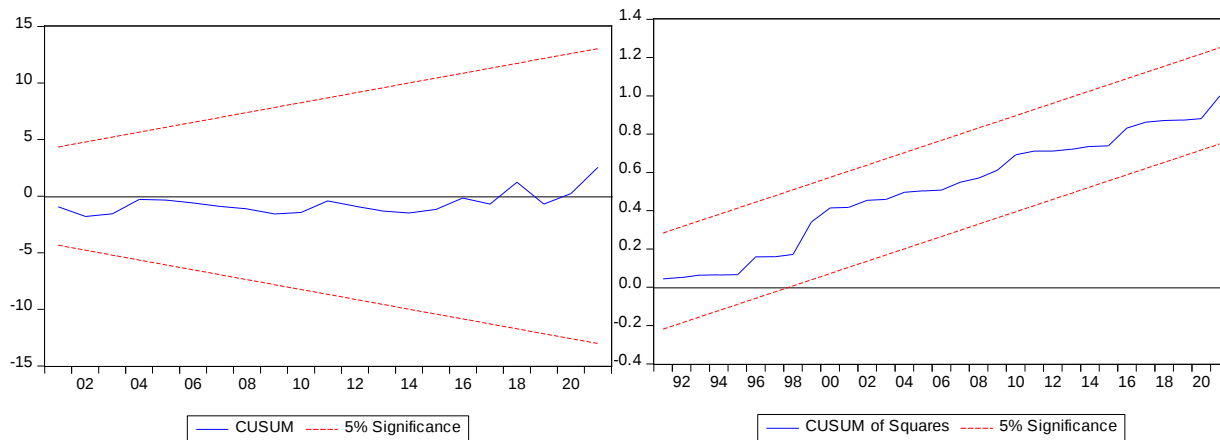
Mean -1.19e-16
Median -0.008388
Maximum 0.159890
Minimum -0.262145
Std. Dev. 0.100209
Skewness -0.337666
Kurtosis 2.852502

Jarque-Bera 0.597285
Probability 0.741825

Source: Author's Computation from E-view 10.0, 2023

Stability test was also conducted to test the stability of the model. The result is presented in the figures below

Figures 1 and 2: CUSUM and CUSUMQ Recursive Residuals



From the figures, it can be observed that the model passes the test for stability given that the blue lines for both the CUSUM and CUSUMQ fall within the critical bounds of 5% level of significance

Causality Test

The aim of the above test is to verify whether UNER, INFR, and GDPGR indices give significant information on POVINDEX.

Formalities happen when an index of POVINDEX is raised and the issue of poverty comes down in the later days and if an index of POVINDEX is dropped in the later days and poverty issue increases, then time series-based Granger causality is formed by threshold value of 5% at p-value must not be greater than 0.05 ($p\text{-value} > 0.05$). The result of causing test in a two-lag length is seen on Table 9 (below).

Table 9: The Estimates of Pair-Wise Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
UNER does not Granger Cause POVINDEX	30	1.51496	0.2393
POVINDEX does not Granger Cause UNER		11.8062	0.0002*
INFR does not Granger Cause POVINDEX	30	0.50668	0.6085
POVINDEX does not Granger Cause INFR		3.38023	0.0502*
GDPGR does not Granger Cause POVINDEX	30	0.03988	0.9610
POVINDEX does not Granger Cause GDPGR		0.09855	0.9065
INFR does not Granger Cause UNER	30	0.88712	0.4244
UNER does not Granger Cause INFR		0.05799	0.9438

GDPGR does not Granger Cause UNER	30	0.18123	0.8353
UNER does not Granger Cause GDPGR		0.44663	0.6448
GDPGR does not Granger Cause INFR	30	0.34910	0.7087
INFR does not Granger Cause GDPGR		0.43346	0.6530

Source: Author's computation using E-views 10.0 software, 2023

Note: * denotes causality.

The causality test in the Table 9 confirmed POVINDEX depends on both UNER and INFR based on their p-values less than 0.05. The results demonstrate that POVINDEX drives both UNER and INFR in a causal manner but the direction goes from POVINDEX to these variables instead of the other way. The results failed to show reciprocal relationships between these investigated variables.

Conclusion and Policy Recommendations

The study concluded that inflation and unemployment have significant impact on poverty rate in Nigeria with implication that increase in unemployment rate will push poverty rate to go up and vice versa in the short run. In this situation, more people are out of job and poverty rate will increase because individuals that lose their jobs will be affected by poverty. On the other hand, the inflation rate has a negative impact on poverty rate in Nigeria which implies that increase in inflation rate will force poverty rate to drop in the long run. This result can be obtained under certain conditions where there is increase in wages and employment, where businesses expand, more incomes are generated by the workers, then poverty will fall. No wonder, the study showed that economic growth has a negative significant impact on poverty rate in Nigeria meaning that when there is economic expansion, more

jobs and income generating activities will be created, more people will be pull out of poverty which showed different results from Mansi, Hysa, Panait and Voica (2020) who found economic growth had a minimal impact on poverty reduction.

Based on the study's findings, the following recommendations were made:

- 1) Government should develop and execute comprehensive employment generation programs to address high unemployment rates and alleviate poverty among vulnerable populations.
- 2) Government should foster an integrated policy approach that recognizes the distinct influences of inflation and unemployment on poverty, aiming to holistically improve economic conditions.
- 3) Government should endeavor to alleviate poverty among vulnerable populations as seek to improve and sustain increased gross domestic growth rate in Nigeria.

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