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EFFECT OF INFLATION AND CORRUPTION ON UNEMPLOYMENT IN NIGERIA

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ABSTRACT

It is a stylize fact that rising unemployment rate and inflation in Nigeria are a disturbing phenomenon. The objective of this study is to examine the effect of inflation and corruption on unemployment in Nigeria. The study used quarterly data from 1996 to 2023 and the Autoregressive Distributed Lag bound testing and error correction model approaches. The findings confirm a long-run co-integrating relationship among unemployment, inflation, corruption and associated variables. The results reveal that inflation and corruption positively influence unemployment in both short run and long run. Results of the causality tests indicate bidirectional causality between inflation and unemployment, while there is no causality between corruption and unemployment. Based on the findings, the study recommends the implementation of effective anti-corruption measures and controlling inflation within reasonable limits, in order to stimulate job creation and reduce unemployment in Nigeria.

1.0 Introduction

Maintaining stable prices and full employment are fundamental to a healthy economy. However, Nigeria faces a complex challenge of persistent high unemployment amidst rising inflation and pervasive corruption, among others (Nelson & Ayawei, 2020; Saddiqa, 2021) which hinder sustainable development, threatens societal stability, and casts a shadow of doubt over the country's future. Unemployment is a situation whereby people, who are physically fit, capable, qualified and ready to work at any time, but without jobs (Fatukasi, 2012). The severity of Nigeria's unemployment crisis is alarming, with 33.3% of the youth population unemployed in 2023 (National Bureau of Statistics [NBS], 2023). This translates to over 30 million young Nigerians unable to secure gainful employment, leading to decreased income, poverty, and social unrest (Onchari, 2019). Corruption plays a significant role in exacerbating this crisis, as it creates an unfair playing field, discourages legitimate businesses, and erodes trust in institutions (Ulman & Bujanca, 2014). Nigeria consistently ranks among the most corrupt countries globally, with Transparency International's 2023 Corruption Perception Index placing it at 149 out of 180 countries (Transparency International, 2023). This widespread corruption manifests in various forms, including bribery, nepotism, and misappropriation of funds, diversion of resources away from productive activities and job creation (Onchari, 2019).

To address this issue, the Nigerian government has implemented various initiatives, including skills development

programs, social investment programs, and entrepreneurship development programs. However, the effectiveness of these programs may be limited by issues like inflation and corruption in public spending (Dreher et al., 2005; Onchari, 2019; Nelson & Ayawei, 2020). In light of this, this, study investigates the effect of inflation and corruption on unemployment in Nigeria, contributing to the empirical literature on this topic.

Following the introduction, the literature review is undertaken in section two.Section three is the methodology, while in section four, the empirical results are presented and analyzed. The paper is concluded in section five.

2.0 Literature Review

2.1 Empirical Literature Review

The relationship between inflation, corruption, and unemployment has been extensively studied in the literature. This section reviews existing empirical studies on this topic, focusing on global evidence and evidence specific to Nigeria.

2.1.1 Relationship between Inflation, Corruption and Unemployment: Global Evidence

Studies have shown that corruption and inflation can have significant impacts on unemployment rates worldwide. For instance, Muriithi and Gachanja (2023) employed panel data analysis to investigate the relationship between inflation, corruption, and unemployment in African countries in African countries. The findings show that inflation and corruption have a significant impact on unemployment in African countries. Also, Esiyok and Ugwu (2023) adopted qualitative method to analyze the relationship between inflation, corruption, and unemployment in developing countries. The results show inflation and corruption have a significant impact on unemployment in developing countries.

Furthermore, Aluko and Ajayi (2023) adopted vector autoregression (VAR) model to investigate the effect of inflation and corruption on unemployment in African countries from 2000-2020. The results suggested that Inflation and corruption have a negative and significant impact on economic growth in African countries, which in turn affects unemployment. Also, Yunana (2021) employed annul panel data for the period 2005-2019 for thirty-three Sub-Saharan African countries to investigate the impact of corruption in public sector on unemployment. The findings revealed that corruption in public sector exerts positive, however, not statistically significant impact on unemployment. Korkmaz and Abdullazade (2020) used data from the period 2009 to 2017 and investigated whether the relationship between the inflation rate and unemployment in nine randomly selected G6 countries (i.e., Australia, Brazil, Canada, France, Germany, Italy, the Russian Federation, Turkey, and the United Kingdom). According to the Granger causality test, the result revealed that there is unidirectional causality from inflation rate to unemployment rate. Najid et al. (2020) employed Vector Error Correction Model (VECM) analysis to examine the nature of inflation-unemployment dynamic causal relationships both in the short and long-run in the ASEAN-10 over the 1989-2018 periods. The results suggested an insignificant relationship between inflation and unemployment in the short-run. However, in the long-run, inflation is found to affect the unemployment rate positively

On the relationship between unemployment and inflation, Sasongko and Huruta (2019) to examine the causal relationship unemployment and inflation in Indonesia from 1984 to 2017, found that there is a unidirectional causality relationship unemployment and inflation running from unemployment to inflation. On the relationship between unemployment and corruption, Onchari (2019) empirically investigates the nexus between corruption and unemployment in Kenya from the year

2000 to 2017 by using the Vector Error Correlation Method (VECM). The study established that corruption has a long-term impact on unemployment in Kenya as in the long run, an increase in corruption rate increases unemployment rates. Elkamel (2019) used panel data of 72 countries through the period 1995-2011 to investigate if the variation in corruption levels jointly with public finance means, seigniorage and borrowing, accounts for the variation in the level of inflation. The results suggest that corruption jointly with public finance means, seigniorage and borrowing, increase the level of inflation.

2.1.2 Relationship between Inflation, Corruption and Unemployment Evidence from Nigeria

Oyinlola and Oyinlola (2024) utilized non-linear regression analysis to examine the relationship between inflation, corruption, and unemployment in Nigeria from 1985-2019. The results revealed that inflation and corruption have a positive and significant impact on unemployment in Nigeria. Also, Muhammad et al. (2023) conducted a comparative analysis of the impact of corruption, inflation, and unemployment in the North and South of Nigeria. The findings suggest that the impact of corruption, inflation, and unemployment is higher in the North than in the South of the country. The study also found that the interaction between corruption and inflation has a positive and significant impact on unemployment in both regions of the country.

Adebayo et al. (2022) utilized a spatial econometric analysis to examine the relationship between inflation, corruption, and unemployment across Nigerian states for the period 2000-2020. The study found that inflation has a positive and significant impact on unemployment in both the focal state and neighboring states, indicating the presence of spatial spillover effects. The study also found that corruption has a negative and significant impact on unemployment in both the focal state and neighboring states. Furthermore, Adeniyi and Adebayo (2022) investigated the impact of inflation and corruption on unemployment in Nigeria from 1996 to 2020, using the Vector Autoregressive model and Granger causality tests. The findings indicate that inflation and corruption have a negative and significant impact on unemployment in Nigeria. The study also finds that there is a bidirectional causal relationship between inflation and unemployment, and a unidirectional causal relationship running from corruption to unemployment.

Adedokun et al. (2022) examined the impact of inflation and corruption on youth unemployment in Nigeria. Using data from 2014 to 2020, the study found that both inflation and corruption have a significant negative impact on youth employment. In addition, Adeyemi et al. (2023) employed a vector auto-regression (VAR) model to investigate the role of inflation and corruption in the unemployment-poverty trap in Nigeria. The findings suggest that inflation and corruption have a bidirectional causal relationship with unemployment.

On the relationship between inflation, corruption and unemployment, Adedayo and Ajayi (2021) in a study on Nigeria from 1981 to 2019 using a simultaneous equation approach, reported a positive relationship between inflation and unemployment and a negative relationship between corruption and economic growth, again suggesting an indirect effect on unemployment. also, Nnaemeka (2021) employed Johansen co-integration, Granger causality and impulse response function to examine the impact of corruption on unemployment using Nigeria data. The result revealed that corruption impacts unemployment positively, and that corruption granger cause unemployment. On the relationship between unemployment and corruption, Nelson and Ayawei (2020) investigated the influence of corruption on employment level in Nigeria from 1994 to

2019. Corruption has direct influence on the level of employment and it is significant.

Most studies in this area have examined the nexus between corruption and unemployment, corruption and inflation, and inflation and unemployment (see Onchari, 2019; Sasongko & Huruta, 2019; Nelson & Ayawei, 2020). However, few studies have investigated the relationship between inflation, corruption and unemployment in Nigeria utilizing methods such as Dynamic Panel Data Analysis, Ordinary Least Square (OLS), or Vector Autoregression (VAR) Models (Adeyemi et al., 2023; Onifade et al., 2023). Notably, none of these studies covered data up to 2023 or combined variables as used in this study. Furthermore, only one study examined the interaction effect between corruption and inflation on unemployment, and it was limited to two regions in Nigeria (North and South of Nigeria), rather than the country as a whole (Muhammad et al., 2023). In addition, despite the existing literature on the relationship between inflation, corruption and unemployment, understanding the underlying sociological factors that drive these phenomena is imperative. This study has used the Durkheim (1893 Anomie theory to explain the Nigerian context, in which the breakdown of social norms and values contributes to the interconnections between inflation, corruption and unemployment. The study can thus inform targeted policies to tackle inflation, corruption and unemployment simultaneously in Nigeria.

2.2 Theoretical Framework

This study is anchored on two theories, namely Phillips (1958) and Durkheim (1893) for the Nigerian context. Phillips (1958) who the first to investigate the relationship between unemployment and the rate of money wages change in the United Kingdom from 1861 to 1957 and found a consistent inverse relationship between unemployment and inflation, in that when unemployment is high, wages increased slowly; when unemployment is low, wages rise rapidly. Phillips inferred that the lower the unemployment rate, the tighter the labor market and, therefore, the faster firms must raise wages to attract scarce labor.

However, economists such as Milton Friedman and Edmund Phelps disapproved Phillips‟ curve thesis, stating that the trade-off between unemployment and inflation only existed in the short-run and that in the long-run, the Phillips curve is vertical. This led to the introduction of the Natural Rate Hypothesis. Friedman's Natural Rate Hypothesis challenges the Phillips curve's long-run implications. It posits that the economy has a natural rate of unemployment, determined by structural factors like labor market frictions and technological advancements. Attempts to push unemployment below this rate through expansionary policies will only lead to temporary reductions in unemployment followed by higher inflation, as the economy adjusts back to its natural rate (Friedman, 1968).

3.0 Methodology

The study uses time series secondary data for the period 1990-2023. Data and their sources are presented in table 1

Table 1: Variable, Measurement and Sources

Variables (acronym)	Measurement/proxy	Sources
Unemployment (UNR)	Unemployment rate (annual percentage rate)	World Bank (2023)
Inflation (INF)	Inflation rate (annual percentage rate)	World Bank (2023)

Corruption (COR)	Corruption (annual scores)	Transparency International (2023)
Population growth (POP)	Population growth (Percentage of annual growth)	World Bank (2023)
EXR	Exchange rate (LCU per US$, period average)	World Bank (2023)
RINTR	Real interest rate (GDP deflator)	World Bank (2023)

Source: Authors' compilation

3.1 Model Specification

Building on the prior studies by Nelson andAyawei (2020) andSaddiqa (2021), this study adopts a modified model to examine the impact of inflation and corruption on unemployment (UNR) in Nigeria. The model is expressed in a functional form in equation 1:

$$UNR = f(INF, COR, INF*COR, POPR, EXR, RINTR) \quad (1)$$

The econometric linear model is specified as follows:

$$\begin{aligned} UNR_t = {} & \alpha_0 + \alpha_1 UNR_{t-1} + \alpha_2 \ln INF_t + \alpha_3 COR_t + \\ & \alpha_4 \ln(INF*COR)_t + \alpha_5 \ln POPR_t + \alpha_6 EXR_t + \alpha_7 RINTR_t +_t \mu_t \end{aligned} \quad (2)$$

where: ln UNRT= Unemployment rate;lnINFt = Log of inflation; lnCORt = Corruption; POPt= Population; EXRt= Exchange rate; and RINTRt= Real interest rate.β0, is the intercept depicting unemployment when the explanatory variables are equal to zero. β1, β2, β3, β4, β5 and β6 are intercept and coefficients to be estimated respectively. μt = the error or disturbance term and lnstands for natural logarithm.

3.2 Technique of Data Analysis

The ARDL approach developed by Pesaran et al. (2001) was used to examine the effect of inflation and corruption on unemployment in Nigeria. The ARDL model for the study is specified as follows:

$$\begin{aligned} \Delta(UNR)_t = {} & \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} \Delta(UNR)_{t-i} + \sum_{i=0}^{l} \alpha_{2i} \Delta \ln(INF)_{t-i} + \sum_{i=0}^{m} \alpha_{3i} \Delta COR_{t-i} \\ & + \sum_{i=0}^{n} \alpha_{4i} \Delta(INF*COR)_{t-i} + \sum_{i=0}^{p} \alpha_{5i} \Delta \ln POPR_{t-i} + \sum_{i=0}^{q} \alpha_{6i} \Delta EXR + \sum_{i=0}^{r} \alpha_{7i} \Delta RINTR + \mu_t \end{aligned} \quad (3)$$

where Δ is the first-difference operator and k is the lag length.

The unrestricted error correction model following the order of ARDL specification is specified as follows:

$$\Delta(UNR)_t = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} \Delta(UNR)_{t-i} + \sum_{i=0}^{l} \alpha_{2i} \Delta \ln(INF)_{t-i} + \sum_{i=0}^{m} \alpha_{3i} \Delta COR_{t-i} + \sum_{i=0}^{n} \alpha_{4i} \Delta(INST * COR)_{t-i} + \sum_{i=0}^{p} \alpha_{5i} \Delta \ln POPR_{t-i} + \sum_{i=0}^{q} \alpha_{6i} \Delta EXR + \sum_{i=0}^{r} \alpha_{7i} \Delta RINTR + \sum_{i=0}^{s} \delta_1 UNR_{t-i} + \sum_{i=0}^{t} \delta_2 INF_{t-i} + \sum_{i=0}^{u} \delta_3 COR_{t-i} + \sum_{i=0}^{v} \delta_4 (INST * COR)_{t-i} + \sum_{i=0}^{w} \delta_5 \Delta \ln POPR_{t-i} + \sum_{i=0}^{x} \delta_6 \Delta EXR + \sum_{i=0}^{y} \delta_7 RINTR_{t-i} + \varphi ECM_{t-1} + \mu_t \quad (4)$$

Where the parameters α_i : i = 1, 2, 3, 4, 5 are the short-run dynamic coefficients, while the parameters ψ_i : i = 1, 2, 3, 4, 5 function as the long-run multipliers of the underlying ARDL model. To test for causality, the study utilizes the Toda-Yamamoto (1995) framework, as it accommodates a mixture of integration, and represented inequations5 and 6(for two variables x_1 and x_2, but can easily be extended for several variables):

$$x_{1t} = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} x_{it-1} + \sum_{j=k+1}^{k+d_{\max}} \alpha_{2j} x_{it-j} + \sum_{i=1}^{k} \lambda_{1i} x_{2t-1} + \sum_{j=k+1}^{k+d_{\max}} \lambda_{2j} x_{2t-j} + w_{1t} \quad (5)$$

$$x_{2t} = \beta_0 + \sum_{i=1}^{k} \beta_{1i} x_{it-1} + \sum_{j=k+1}^{k+d_{\max}} \beta_{2j} x_{it-j} + \sum_{i=1}^{k} \varphi_{1i} x_{2t-1} + \sum_{j=k+1}^{k+d_{\max}} \varphi_{2j} x_{2t-j} + w_{2t} \quad (6)$$

Where causality from x_2 to x1in equation 5 is tested in $\lambda_1 \neq 0$ for all *i*, causality from x_1 to x_2 in equation 6 is tested in $\beta_1 \neq 0$ for all *i* respectively, and where *k* is the lag length.

4.0 Results and Discussion

The results of unit root tests are presented in table 3.

Table 3: Results of Unit Root Tests

Panel A: ADF unit root test results

Variables	Level	First difference	Order of integration
*ln*UNR	-0.226	-3.866***	I(1)
*ln*INFL	-4.348***	-4.2975	I(0)
*Ln*COR	-3.084	-6.104***	I(1)
*ln*POP	-5.457***	-5.1751	I(0)
EXR	-0.995	-3.004**	I(1)
RINTR	-3.717**	-3.522	I(0)

Panel B: PP unit root test results

Variables	Level	First difference	Order of integration
*ln*UNR	0.393	-3.952***	I(1)
*ln*INFL	-3.444**	-4.3466	I(0)
*Ln*COR	-4.130***	-6.268	I(0)
*ln*POP	0..516	-2.368**	I(1)
EXR	0.270	-3.465**	I(1)
RINTR	-3.445**	-4.885	I(0)

Notes: Both ADF and PP tests are conducted with intercept. ***, ** and * indicate significance at 1%, 5% and 10% level, respectively. Source: Researchers' estimation

The results of unit root tests from both ADF and PP tests in Table 3 indicate that there is a mixture of integration, when ADF and PP are considered jointly. Inflation **(***lnINF***)** and real interest rate (RINTR) are stationary at level and are integrated of order zero, that is I(0), while Unemployment rate (*lnUNR*)

andexchange rate (EXR) are not stationary at level and thus integrated of order I(1). There appears to be a conflict in the results for Corruption (*lnCOR*) and population (POP) between the ADF and PP. Considering the superiority of PP to ADF, it can be inferred that while corruption is stationary (i.e. I/0), population is not stationary except at first difference ((i.e. I/1). On the whole, the mixture of integration of the regressors permits the use of the ARDL technique as the dependent variable (lnUNR) is non-stationary while none of the variables is integrated or order 2.

The result of the bounds test in Table 4 indicates that the value of F-statistic (4.899) is greater than the critical value of 4.39, at 1% level of significance. Hence, the null hypothesis is rejected. This implies that there is a long run relationship among the variables.

Tables 4: Result of ARDL Bounds Test

	Value	k
F-statistic	4.899***	6
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.33	3.25
5%	2.63	3.62
1%	3.27	4.39

*** denotes rejection of the null hypothesis of no co-integration at 1% level.
Source: Authors' computations.

The results of long run in Table 5 reveal that Inflation (***ln****INF*) has positive and statistically significant effect on unemployment at 1% level of significance. This shows that, a one percentage increase in inflation rate is associated with a 0.225% increase in the unemployment rate, holding other factors constant. The result is in line with the work of Adedayo et al. (2021),Adeniyi (2022) andAbdullahi et al. (2023). Consequently, the result show tend to show the presence of stagflation in the Nigerian economy, an indication that the Phillips curve hypothesis does not exist in Nigeria.

Table 5: Results of ARDL Model (Long-run Coefficients)
Dependent variable: *ln(*UNR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
*ln*INF	0.225***	0.086	2.630	0.010
*ln*COR	0.343***	0.108	3.188	0.002
ln (INF*COR)	-0.197**	0.084	-2.351	0.021
*ln*POP	13.86***	2.631	5.269	0.000
EXR	-0.00042	0.000	-1.001	0.320
RINTR	0.004***	0.001	3.370	0.001
@TREND	0.004***	0.001	2.880	0.005

Note: ***, ** and * indicate statistical significance at 1%, 5% and 10% levels respectively

Sources: Authors' computations.

The coefficient of corruption is positive and statistically significant at 1% level of significance. This signifies that a one-unit increase in the corruption perception index would lead to a 0.343% increase in the unemployment rate, other things being equal. This result aligns with the *apriori* expectation that corruption diverts resources from productive activities, hinders investment, and undermines trust in the economy, thereby hindering job creation in the economy. The result is in conformity with the findings by Nelson and Ayawei (2020); Yunana et al. (2021); Nnaemeka (2021) who found a positive relationship between corruption and unemployment in Nigeria. Akor (2014) argued that corruption is most pervasive in a country like Nigeria

where, the institutional mechanisms for combating corruption are weak or not used; extensive governmental control and regulation of economic resources provide opportunity for corrupt exchanges and corruption is so socialized at all societal levels that it is accepted and tolerated.

Moreover, the interaction between inflation and corruption has a negative coefficient of 0.1969 which is statistically significant at 1% level. This suggests that the negative impact of inflation on unemployment is mitigated by higher levels of corruption. This could be due to various reasons, such as informal sector employment, rent-seeking behavior, or reduced competition. This result is contrary to the findings of Muhammad et al. (2023) who found positive impact of interaction between inflation and corruption on unemployment in both North and South of Nigeria. Also, the result reveals that, the coefficient of 13.863 and statistically significant at 1% level indicates a highly statistically significant positive relationship between population growth and unemployment in the long run. This implies that a 1% increase in population growth is associated with a 13.863% increase in the unemployment rate. This finding aligns with the demographic dividend theory, which posits that a young and growing population can be a source of economic growth under favorable conditions (Bloom & Williamson, 1998). However, in the absence of sufficient job creation, rapid population growth can exert pressure on the labor market, leading to higher unemployment rates, especially among youth. This result is aligns with the findings of Saddiqa (2021) who found positive impact of population growth on unemployment.

Furthermore, the coefficient of exchange rate is not significant even at the conventional levels. This implies that fluctuations in the exchange rate do not significantly affect the long-term unemployment rate in long run. This result is consistent with the findings of Saddiqa (2021) who found negative impact of exchange rate on unemployment. This finding might be influenced by factors such as the relatively closed nature of the economy and the dominance of the non-tradable sector. In addition, the positive coefficient of 0.0037 and a p-value of 0.0011 indicate a statistically significant positive relationship between the real interest rate and unemployment in the long run. This implies that a 1% increase in the real interest rate is associated with a 0.0037% increase in the unemployment rate. Higher interest rates can discourage investment and consumption, leading to lower economic growth and higher unemployment. The positive coefficient of 0.0043 and a p-value of 0.0050 of @trend suggest that unemployment has tended to increase over time in the Nigerian economy.

The results of the short-run model in Table 6 show a positive and statistically significant coefficient of the lagged unemployment rate (0.6887) at 1% level of significance. This indicates a strong persistence in unemployment and that past levels of unemployment significantly influence current unemployment levels. Inflation has a direct and significant influence on unemployment. Thus, a 1% increase in inflation leads to about 0.094% increase in unemployment rate. This result tends to disprove the traditional Phillips curve hypothesis which hypothesizes a negative relationship between inflation and unemployment rate. However, past inflation is associated with a 0.094% decrease in the current unemployment rate at the 5% level of significance. This result agrees with the findings of Enejoh and Tsauni (2017), and Anoka et al. (2021) whose studies indicate inverse relationship between unemployment and inflation in the short-run.

Table 6: Results of ARDL (Short-run Coefficients)

Dependent variable: *ln*UNR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ln(UNR(-1))	0.6887***	0.074	9.34	0.0000
ln(INFL)	0.0942***	0.024	3.994	0.0001
D*ln*(INFL(-1))	-0.0196***	0.008	-2.44	0.0167
ln(COR)	0.0920***	0.025	3.625	0.002
ln (INF*COR)	-0.0569***	0.021	-2.722	0.0078
ln(POP)	10.924***	2.436	4.485	0.0000
ECM	-0.1332***	0.02	-6.504	0.0000
R^2	0.999028			
Adj. R^2	0.998874			

Note: ***, ** and * indicate statistical significance at 1%, 5% and 10% levels respectively
Sources: Authors' computations.

In addition, corruption has a significant positive effect on unemployment rate at 1% level. This suggests that a 1% increase in the level of corruption, will lead to 0.092% increase in unemployment. This result is in line with the findings of Adeniyi and Adebayo (2022), and Adeoye et al. (2023). The result of short-run also shows that, the interaction effect of inflation and corruption is inversely related to unemployment in Nigeria. This means that, 1% increase in interaction effect between the two variables (inflation and corruption) brings about 0.06% decrease in unemployment. The coefficient of population growth rate is positively related to unemployment rate in the short-run and is statistically significant at 1%. Consequently, a 1% increase in population growth leads to a 10.9% increase in the unemployment, other factors remaining the same. This result is in line with the findings of Maijama'a, et al. (2020).

The coefficient (-0.1332) of the ECM is negative, less than one and statistically significant at 1% level. This suggests that the speed of adjustment to equilibrium is about 13% quarterly (which translates to about 53.28% per annum). The statistically significant ECM coefficient is a confirmation of the presence of cointegration (long run equilibrium) among the variables used in the study. The F-statistic value of 4.899is significant at 1%, implying that the regressors are jointly significant in their effect on unemployment in Nigeria. The adjusted R^2 value of 0.9989 implies that 99.89% variation in unemployment rate is explained by movements in the explanatory variables. The Durbin-Watson statistic of 1.955 is approximately equal to 2, suggesting the absence of autocorrelation in the residuals

The causality test results are presented in table 5.

Table 5: Results of the Toda and Yamamoto Causality Tests

Null hypothesis	Df	Chi-square	P- values	Accept/Reject	Conclusion
*ln*UNR→ *ln*INF	2	5.485611	0.0644	Reject	
*ln*INF→ *ln*UNR		4.978665	0.083	Reject	Bidirectional
*ln*UNR→ *ln*COR	2	4.032073	0.1332	Do not reject	
*ln*COR→ *ln*UNR		2.928387	0.4028	Do not reject	No causality
*ln*INF → *ln*COR	2	6.552776	0.0378	Reject	
*ln*COR→*ln*INF		1.153003	0.5619	Do not reject	Uni-directional
*ln*UNR →*lnPOP*	2	5.2929	0.0709	Reject	

lnPOP→*ln*UNR		4.099673	0.1288	Do not reject	Uni-directional
*Ln*UNR → EXR	2	14.58193	0.0007	Reject	
EXR→*Ln*UNR		7.869255	0.0196	Reject	Bidirectional
*Ln*UNR → RINTR	2	3.958404	0.1382	Do not reject	
RINTR→ *Ln*UNR		4.791227	0.0911	Reject	Uni-directional

Source: Authors' Computations

The causality results in table 6 show a bi-causality occurs between unemployment rate and inflation. This indicates a reciprocal relationship between unemployment and inflation suggesting that changes in either variable can cause changes in the other. This finding aligns with the Phillips curve theory, which suggests a trade-off between unemployment and inflation in the short run. Additionally, there is no causality between unemployment rate and corruption in Nigeria. The results of post-estimation tests are presented in table.

Table 6: Post-estimation Diagnostics

Test Statistic	Results [prob.]
Normality: Jarque-Bera	8.924099 [0.0115]
Serial Correlation: F(2,86)	0.218486 [0.8042]
Heteroscedasticity: F(14,88)	1.475410 [0.1372]
Ramsey Reset F-stat(1,87)	1.382667 [0.1703]

Source: Authors' Computations

All the test results are satisfactory, as can be seen from the statistically non-significant p-values. Thus, the Jarque-Bera test for normality indicates that the residuals are multivariate normal. In addition, the Breusch-Godfrey serial correlation test indicates that the null of no autocorrelation is not rejected. Similarly, the heteroscedasticity shows that the variance is homoscedastic. Finally, the Ramsey reset test indicates that there is no evidence of misspecification in the model estimated in the study. The stability test results are presented in figure 1.The cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residual (CUSUMSQ) tests indicate that they are within the 5% bands, suggesting the stability and reliability of the estimated coefficients over the period of investigation.

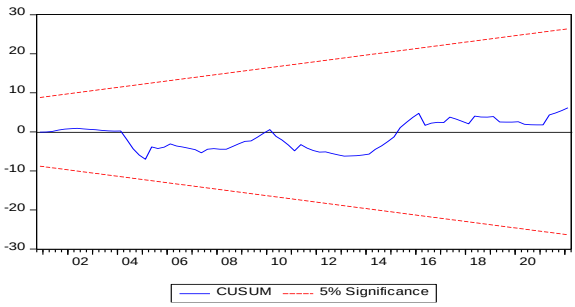

Fig. 1 Cumulative Sum of Squares

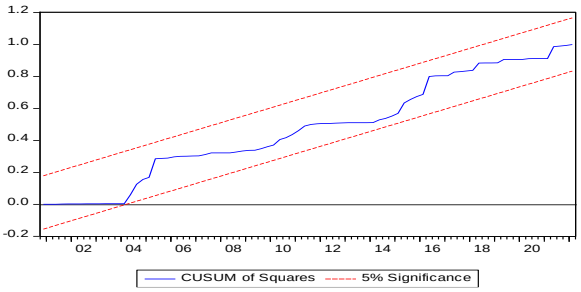

Fig. 2 Cumulative Sum of Squares

Source: Authors' Computations.

5.0 Conclusion

The study examined the effect of inflation and corruption on unemployment in Nigeria from 1996 to 2023, using the Autoregressive Distributed Lag approach for analysis. Cointegration was found to exist among the variables. The following are the summary of the findings:

i. Inflation and corruption each has a positive effect on unemployment in both the short and long run.

ii. Bidirectional causality was found between inflation and unemployment, while there was no

causality between corruption and unemployment.

Based on the results, the following are recommended:

i. Government should implement fiscal and monetary policies to control inflation over the long term. Measures in this regard include tackling key drivers of inflation like fuel prices, real interest rate and exchange rates and also promote competition in key sectors to stabilize prices.

ii. Government should promote institutional quality with respect to corruption. This includes implementing anti-corruption laws with strong enforcement mechanisms, fostering a culture of integrity through education and awareness campaigns, and empowering whistle-blowers to report corrupt practices.

iii. There should be both private and public investments in the real sector to promote job-creation, increase output, and accommodate a growing population.

iv. Devaluation is discouraged since Nigeria is given that the country earns foreign exchange from one source (sale of crude oil), the price of which is determined internationally

v. Government should implement policies to improve access to credit for businesses.

References

Abdullahi, A., Usman, A.& Ali, M. (2023). Inflation, corruption, and economic growth in Nigeria: An ARDL bounds testing approach. Journal of Economics and Sustainable Development, 14(2), 1-13.

Adebayo, T.O. (2020). Combating corruption in Nigeria: Acritical analysis. Journal of financial Crime, 27(4), 1050-1063.

Adebayo, T.O., Oyewole, O.O.&Adedoyin, F.O. (2022). Inflation, corruption, and unemployment in Nigeria: A panel data analysis. International Journal of Economics and Financial , 12(5), 1-9.

Adedayo, O.O. &Ajayi, O.A. (2021). The Nexus between Inflation, Corruption and Unemployment in Nigeria: A Simultaneous Equation Approach. International Journal of Economics and Financial Issues, 11(1), 1-12.

Adedokun, O. A., Awolaja, Y.A. &Olowookere, J.K. (2022). Corruption and inflation's impact on youth unemployment in Nigeria. International Journal of Social Economics, 49(5), 638-653.

Adeniyi, O.& Adebayo, T. (2022). Inflation, corruption, and unemployment in Nigeria: A VAR model .Journal of Economic and Financial Studies, 11(1), 1-15.

Adeoye, O.S., Ogwumike, O. &Popoola, A.O. (2023). Inflation, corruption, and youth unemployment in Nigeria: A dynamic panel analysis. International Journal of Economic Development, 25(1), 23-41.

Adeyemi, O.A., Adeniyi, O. &Oyinlola, M.A. (2023). Inflation, corruption, and the unemployment-poverty trap in Nigeria: A VAR model approach. Journal of Economics and Sustainable Development , 14(1), 1-13.

Akor, L. (2014). The transparency international and Nigeria's corruption perception index: implications for sustainable transformation. Global Journal of Interdisciplinary Social Science, 3(5), 37-43.

Aluko, O. A., & Ajayi, M. A. (2023). Inflation, corruption, and unemployment in Africa: A panel data analysis. Journal of African Business, 24(2), 12-25.

Anoke, C.I., Ogbonna, B.C., Atuma, E. & Uzoechina, B.I. (2021). Investigating the Relationship between Unemployment and Inflation in Nigeria. International Journal of Current Science Research and Review, 4(3), 203-217.

Bloom, D.E. & William, D. (1998). Geography, Demography, and Economic Growth in Africa. Brookings Papers on Economic Activity 2, 207-273.

Dreher, A. & Herzfeld, T. (2005) The Economic Costs of Corruption: A Survey and New Evidence. Working Paper 0506001, Public Economics, EconWPA.

Durkheim, É. (1893). The Division of Labour in Society. Free Press

Elkamel, H. (2019). The Effect of corruption, Seigniorage and Borrowing on inflation. PSU Research Review, 3(1), 1-15.

Enejoh, S.Y. &Tsauni, A.M. (2017).An Analytical Study of the Impact of Inflation on Economic Growth in Nigeria (1970-2016). International Journal of Academic Research in Accounting, Finance and Management Sciences, 7(4), 110-120.

Esiyok, B., & Ugwu, D. (2023). The effects of inflation and corruption on unemployment in developing countries. International Journal of Economic Studies, 8(1), 33-46.

Fatukasi, O.A. (2012). Inflation and Economic Growth in Nigeria: An Empirical Analysis. African Journal of Economic and Management Studies, 3(4), 428-437.

Friedman, M. (1968). The Role of Monetary Policy. The American Economic Review, 58(1), 1–17.

Irewole, O. (2019). Inflation and Unemployment Relationship: A Dynamic Report of Nigeria and Mexico in the perspective of Phillips Curve from 1991-2016. International Journal of New Economics and Social Sciences (IJONESS), 10(2), 11-30.

Korkmaz, Ö. & Abdullazade, N. (2020). The relationship between inflation and unemployment: Evidence from G6 countries. Journal of Economic Studies, 47(4), 839-853.

Maijama'a, R., Musa, K.S., Yakubu, M. & Mohammad, N. (2020). Impact of Population Growth on in Nigeria: Dynamic OLS Approach. Journal of Economics and Sustainable Development, 10(22), 78-89.

Merton, R.K. (1957), Social Theory and Social Structure. Free Press: New York.

Muhammad, A., Ali, M.& Umar, M. (2023). Interaction effect of inflation and corruption on unemployment in Nigeria: A regional analysis. Journal of Economics and Sustainable Development, 14(1), 13-25.

Muriithi, J. N., & Gachanja, P. M. (2023). The impact of inflation and corruption on unemployment in Africa. Journal of African Development, 25(1), 1-15.

Najid, N.A., Noor, R.M., Yaacob, N.A., Zulkifli, N. & Rahim, A.F.A. (2020). Anti-Corruption initiatives: Experience of several Southeast Asia countries. Gading Journal for Social Sciences, 23(2), 9-24.

National Bureau of Statistics (NBS) (2023). Unemployment Rate in Nigeria. https://www.nigerianstat.gov.ng/

Nelson, J. &Ayawei, M. (2020). Effect of Corruption on Employment in Nigeria: An empirical investigation. International Journal of Development and Economic Sustainability, 8(3), 32-46.

Nnaemeka, N.O. (2021). Does corruption matter for unemployment? Investigating the role of bribery, favouritism and nepotism corrupt practices in employment, evidence from Nigeria. Journal of Developing Economies, 3(1), 32-50.

Odo, S.I., Elom-Obed F.O., Okoro T.O. & N wachukwu J.O. (2017). Understanding the Relationship between Unemploym ent and Inflation in Nigeria. Journal of Poverty, Investment and Development , 55, 55-64.

Onchari, D.G. (2019). The Relationship betw een Corruption and Unemployment in Kenya, AkademiSosyalBilimlerDergisi , 6(17), 309-318.

Onifade, S.T., Ogunyemi, A.I. & Oyinlola, M .A. (2023). Government policies and in flation, corruption, and unemploymen t in Nigeria. Journal of Public Policy, 4 3(1), 1-18.

Oyinlola, M. A., & Oyinlola, A. O. (2024). Inf lation, corruption, and unemployment in Nigeria. Journal of Economic Studie s, 51(1), 12-25.

Ozsahin, S. & Ulcer, G. (2017) the Conseque nces of Corruption on Inflation in Dev eloping Countries: Evidence form Pane l Cointegration and Causality. Econom ies, 5(49), 2-15.

Pesaran, M.H., Shin, Y. & Smith, R. (2001). B ound testing approaches to the Analys is of Level Relationship. Journal of Applied Econometrics, 16(3), 289-32 6.

Phillips, A.W. (1958). The Relation between Unemployment and the Rate of Chang e of Money Wage Rates in the United K ingdom. Economica, 25(100), 283-299.

Saddiqa, A. (2021). Determinants of Unempl oyment in Selected Developing Countr ies: A Panel Data Analysis. Journal of E conomic Impact, 3(1), 19-26.

Sasongko G. &Huruta A.D. (2019)The Causa lity Between Inflation and Unemploym ent: The Indonesian Evidence. Busines s Theory and Practice, 20, 1-10.

Toda, H.Y. & Yamamoto, T. (1995). Statistica l infer¬ences in vector auto-regressions with possibly in¬tegrated processes. Jo urnal of Econometrics, 66(1), 225-250.

Transparency International. (2023). Corrupti on Perception Index 2022. https://ww w.transparency.org/en/cpi/2022

Ulman, S. &Bujanca G. (2014). The Corrupti on Influence on the Macroeconomic En vironment: Empirical Analysis on Cou ntries Development Stages. Procedia E conomics and Finance, 1(6), 427-437

World Bank (2023). World Development Ind icators. https://databank.worldbank.o rg/source/world-development-indica tors

Yunana I.Z., Magai A., Adeshlaa F.G. & Matthew M.J. (2021).Public sector corruption and unemployment in Sub-Saharan Africa: An empirical investigation. International Journal of Multidisciplinary Research and Growth Evaluation, 2(4),607-615.