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THE IMPACT OF EXCHANGE RATE VOLATILITY AND INFLATION ON THE NIGERIAN ECONOMY

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Abstract

In African countries, exchange rate volatility, inflation, and economic growth relationships remain debatable, especially in Nigeria, because of the historical homogeneity of the monetary macroeconomic variables among the member countries. Therefore, the purpose of this paper is to examine the relationship among exchange rate volatility, inflation, and economic growth in Nigeria from 1985 to 2022. The autoregressive distributed lag (ARDL) estimation technique of analysis was employed in achieving the objective of the study. We employed GARCH (1, 1) to obtain the volatility of the exchange rate data. Results indicated that exchange rate volatility and inflation adversely influenced the growth of the Nigerian economy. Further analysis reveals a negative impact when the interaction of exchange rate volatility and inflation is tested on growth. Also, the result revealed that gross capital formation promotes the growth of the Nigerian economy. This result confirms the positive evidence ascertained in the literature on the investment growth nexus. It is therefore recommended that policies that focus on improving local currency should be the top priority of the government. Also, policies that would reduce overdependence on foreign raw materials for production should be encouraged.

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Key words:
Volatility, GARCH, ARDL, Nigeria.

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1. Introduction

Many less developed countries have experienced poor economic performances over the last decades, including Nigeria. The shocks from COVID-19 took a large toll on their economies. While some countries have recorded rapid economic recovery, sluggish growth has been recorded by some African countries, especially Nigeria (Ghecham, 2022; AFDB, 2023). Although recent reports from the AFDB and the World Bank indicate that African economies remain resilient amidst multiple shocks, average growth is projected to stabilize at 4.1% in 2023–2024. Suggestions from the World Bank and the IMF indicate that constant instabilities in the exchange rate and consumer prices of goods and services could have compounded the weak and poor economic performance prior to the COVID-19 crisis (Ha, Kose, & Ohnsorge, 2022; AFDB, 2023).

Nigeria's economy grew slowly in 2022 with less than 3.3%; this is below the growth rate of the majority of West African nations, including Niger with 9.4%, Senegal with a record of 7.7%, Togo with 6.4%, Benin 6.1%, and Mali 5.2%, respectively (AFDB, 2023). The poor economic performance in Nigeria in 2022 is a result of weak private consumption and investment (Abdulkarim, 2023) that is connected to persistent exchange rate instability and the double-digit inflation record over a long period, as the inflation rate recorded at 13.7% in 2010 rose to 15.6% in 2016 and to 18.8% in 2022. The drop in private consumption demonstrates how tight monetary policy and rising commodity prices have a detrimental impact on household spending power (Samal & Goyari, 2022; Okon, Eke, & Morgan, 2023). Although AFDB (2023) stated that inflation is anticipated to fall sharply in all regions, the ongoing instability in Nigeria is anticipated to have a long-lasting impact on economic growth and may further deteriorate the projection for a future recovery as inflation is anticipated to rise to an average of 16.6% in 2023–2024.

The overreliance of Nigeria on imported food and energy, as well as the rise of the US dollar against the Naira, exacerbated currency shortages and caused the national currency to depreciate quickly (Calderon et al., 2022). Also, the inflationary pressures brought on by sharp increases in the price of food and energy worldwide occurred as a result of rising insecurity, wars, ongoing herdsman and farmer crises that restrict the availability of food, and a plethora of climate-driven disasters that have a detrimental influence on food production. Double-digit inflation is a threat that hinders macroeconomic performance, economic growth, and development in developing nations like Nigeria (Olamide, Ogujiuba, & Maredza, 2022; IDOLOR & Raphael, 2022). The recent withdrawal of the PMS subsidy and the subsequent rise in food inflation after the COVID-19 outbreak have the potential to further restrict social welfare and household standards (Evans et al., 2023).

A report from AFDB (2022) indicated that Nigeria’s economy grew by 3.6% in 2021 after contracting by 1.8% in 2020. On the supply side, the growth rate increased by 4.4% in the non-oil sector, which offset an 8.3% contraction in the oil sector. The services and agricultural sectors led other non-oil sectors by 5.6% and 2.1%, respectively. Growth rates slowed down in 2022, averaging 3.3%, as a result of high pipeline vandalism rates and ongoing poor oil output brought on by aged infrastructure. The low output levels of production have adversely countered the benefits of the increasing crude oil prices, which also persistently obstruct the oil sector's ability to contribute to economic growth. The weakening and depreciation of the naira, along with the mismatch between supply and demand for foreign money and the growing discrepancy between the official and black-market exchange rates in Nigeria, continue to hamper economic growth performances.

As a result of exchange rate fluctuations, of which Nigeria was not excluded, the soaring food prices in 2022 and a global high cost of living pushed many people into poverty due to the spike in energy and food costs, which was exacerbated by the conflict between Russia and Ukraine. The increase in food prices at the beginning of the year due to high demand contributed to inflation. In 2023, inflation is expected to continue to rise and stay beyond pre-pandemic levels. This will be mostly due to growing costs for food, gasoline, and diesel, as well as ongoing supply disruptions exacerbated by the conflict between Russia and Ukraine.

According to the International Monetary Fund (IMF) (2019), the persistent rise in inflation has dampened investors' faith in future monetary policy. While the strengthening of the currency will result in cheaper imports and could also lower the inflation rate, the possibility of prolonged inflation instability and

the existence of less investment imply the likelihood of distortion in the price level in the long run. According to the AFDB (2023), currency weakness in some of Africa's more globally integrated countries, including Kenya, Nigeria, and South Africa, is predicted to continue in 2023, in large part because of probable capital outflows as investors look for secure assets in advanced nations. Nigeria uses a fixed exchange rate system, in which the Central Bank purchases and sells currency to balance out the market's supply and demand for money. Nigeria has, on the other hand, put pressure on the use of major foreign currencies such as the United States Dollar, the Pound Sterling, and the Euro, which has led to excess demand over supply. As a result, the naira depreciates while the major foreign currencies appreciate. Also, excessive reliance on foreign goods, education, and technology causes exchange rate volatility (Akpan & Udo, 2023). Additionally, the national currency has been under pressure due to changing macroeconomic variables, shortages of foreign currency, and stricter banking conditions, which have also made the foreign exchange unstable. Economic theory has proposed an empirical analysis of the linkage between exchange rate and inflation, arguing that a stable exchange rate may reduce inflation (Şen et al., 2020). In the economic literature, there were mixed results on the effects of inflation and exchange rate volatility on the economy. To this end, no consensus has been reached on the relationships between exchange rate volatility, inflation, and economic growth, because exchange rate and inflation instabilities pose a threat to the economies of developing countries, mostly African countries. Therefore, the purpose of this paper is to examine the relationship among exchange rate volatility, inflation, and economic growth in Nigeria. Within the time series framework from 1985 to 2022, this paper uses an autoregressive distributed lag model to analyze the impact of exchange rate, inflation, and economic growth relationships in Nigeria. Policy recommendations that can strengthen the connections between the exchange rate, inflation rate, and economic growth are also discussed. Concerns have been raised about Nigeria's economy's ability to recover from the COVID-19 problem due to the country's growing exchange rate and unstable inflation rates. This study also advances our understanding of how emerging and developing economies respond to exchange rate and inflationary instabilities in terms of economic growth.

The remaining sections of the work are arranged as follows: Section 2, which comes after the introduction, deals with the review of literature; Section 3, which follows, discusses the dataset used and the research methodology used for econometric analysis; Section 4 presents the report of findings and its discussions; and Section 5 concludes the study briefly and offers some recommendations.

2. Literature Review

The empirical literature on channels where instabilities in exchange rates and inflation rates affect the real economy is crucial. There are several causes of exchange rate volatility; a few of them are the dynamism of the business environment, the unfavourable policies of the government, and the fluctuation of macroeconomic factors such as GDP, exports, imports, etc. The early traditional economists (Mundell, 1965; Tobin, 1961; Sarel, 1996). established that there is a relationship between inflation and economic growth based on the inflation threshold. Numerous empirical studies have used various variables, theoretical models, econometric approaches, data types, etc. for the empirical research and produced inconclusive results in order to determine the impact of the exchange rate and inflation rate separately on economic growth.

Ribeiro et al. (2019) examined the relationship between the real exchange rate and economic growth in 54 developing countries with data covering 1990–2010. They discovered that undervaluation had a bad impact on economic development in emerging nations. Similar findings were made in Karahan's (2020) paper on exchange rate nexus economy growth in Turkey. The paper employed quarterly data from 2002 and 2019. The outcome of the study suggested a negative relationship between exchange rates and economic growth, with increases in exchange rate levels being associated with declines in output levels. According to the report, stability in both prices and exchange rates should be encouraged in order to target inflation. Tran (2018) used the VAR model to analyze exchange rates, output, and inflation nexus in Vietnam and discovered that the lag between the GDP growth rate and price has an impact on the economy of Vietnam.

According to recent research by Amor et al. (2023) on the effect of real exchange rate misalignments on economic growth in Tunisia, the country experienced both overvaluation and undervaluation of its currency between 2001 and 2016. The overvaluation period had a negative impact on Tunisia's economy, while the undervaluation period had little to no effect. The threshold for the real exchange rate misalignment effect on growth is noteworthy because real undervaluation fosters growth up to an estimated threshold of 10.02% deviation from the equilibrium RER. Using data from Iran, Iraq, and Turkey between 2005 and 2020, Najafi Bousari et al. (2023) discovered that while inflation negatively influenced gross domestic products in the countries, the exchange rate had no discernible effect. From the literature, the majority of findings indicate that rising inflation reduces household purchasing power and disproportionately affects the population's most vulnerable group. It is also recommended that the inflation rate be reduced from double-digits to single-digits in order to encourage investment. Idris and Suleiman (2019) look at the impact of inflation on Nigeria's economic growth between 1980 and 2017. The study uses a vector error correction mechanism on the variables chosen, and the results show that there is a significant and negative long-term impact on Nigeria's economic growth. Adaramola and Dada (2020) employ the autoregressive distributed lag on the impact of the inflation rate, interest rate, exchange rate, degree of the economy`s openness, money supply, and government consumption expenditures on real gross domestic product (GDP) for the period 1980–2018. The study's findings show that inflation and real exchange rates retard economic growth. The paper recommends that the monetary authorities make a more pragmatic effort to target inflation vigorously in order to prevent its adverse effect by ensuring a tolerable rate that would stimulate the economy.

Using an endogenous model that demonstrated the pathways via which inflation influences growth, De Gregorio (2021) examined the relationship between inflation and growth rates for a sampled set of Latin American nations. Resources have been diverted away from activities that promote quicker rates of growth in favour of those linked to lowering the costs of inflation, which has resulted in a slowdown in growth. For a sample of Latin American nations, an empirical assessment of the negative correlation between inflation and growth is made. Tarawalie and Kamara (2022) use a non-linear model (quadratic function) in Sierra Leone. Using the time-series data from 1980 to 2020 to examine the connection between inflation and economic growth within the ordinary least squares estimation techniques, a parsimonious conclusion was reached. The results demonstrate that the link between inflation and growth is not linear. The findings show that 10.3% is the base value (the ideal level of inflation) that is advantageous for economic growth. Therefore, in Sierra Leone, inflation promotes economic growth when it is lower than 10.3%, but it is harmful when it is higher. Also, Azam and Khan (2022) evaluate inflation on the economic growth nexus for 27 countries (16 developing and 11 developed economies) spanning the years 1975–2018. Their findings indicate a substantial inverse relationship between inflation and growth above the inflation threshold. According to the empirical estimate, inflation has the biggest negative consequences in developed nations when it reaches the turning point, which is 12.23% in developing countries and 5.36% in developed ones, respectively.

3. Data and Methodology

3.1 Description of Data

This study employed time series data (annual) that covered the period from 1985 to 2022 for Nigeria. The gross domestic product per capita was used to proxy the Nigerian economy in the current US$; the Nigerian exchange rate was measured by the official exchange rate (EXC) in naira per US$; inflation was measured by the consumer price index (INF); and investment was proxied by the gross capital formation (GCF). All the data employed in the study were retrieved from the World Development Indicators (2022 edition). The selected variables were in line with extant literature (see Meyer and Hassan, 2020; Olamide and Marcedza, 2021).

3.2 Model Specification

The data used for this study were analyzed using the Eviews 12 econometrics package. Following Barguellil et al. (2018), Wesseh and Lin (2018), and Olamide et. al. (2022), our model is specified as follows:

$$lnGDP_t = \alpha + \vartheta EXCVOL_t + \gamma INF_t + \delta GCF_t + \varepsilon_t \quad (1)$$

where GDP indicates economic growth, α represents the country intercept while ϑ, γ, and δ are the coefficients of the independent variables. EXC is the official exchange rate, and INF represents inflation. The control variable in the equation represents the gross capital formation (GCF) used as a proxy for the nation's investment. This is chosen because investment is a dominant factor that has a major influence on the economic activities of any nation. ε_t is the stochastic error term that captures other economic growth determinants not included in our model. To examine the relationship among the series - GDP, EXC, INF, GCF, we employ the Autoregressive Distributed Lag (ARDL) Model developed by Pesaran et al. (2001). The choice of the ARDL model is selected because it allows the estimation of a mixture of stationary data at level *I*(o) and first difference *I*(1). It also allows the short and long run relationships to be examined simultaneously (Pesaran et al. 1999), unlike the Ordinary Least Squares (OLS) estimation technique, which can only analyze data of the same order of integration. In using the OLS method, it is also difficult to ascertain both the short and long run simultaneously. Therefore, the ARDL technique is suitable for this study, and it is expressed as follows:

$$lnGDP_t = \alpha + \sum_{1=t}^{\rho} \alpha_j \, \Delta lnGDP_{t-1} + \sum_{j=t}^{q} \gamma_j \, \Delta X'_{t-1} + \varepsilon_t \quad (2)$$

where $X'_t = (EXCVOL_t, INF_t, INTER_t, GCF_t)$. The variable $INTER_t$ is the interaction of exchange rate volatility and inflation. Hence, t stands for the time dimension expressed in years, while j represents the lag numbers. InGDP is the logarithm of economic growth proxied by GDP per capita at t period, which represents the dependent variable, while vector X'_t stands for the independent variables of exchange rate volatility, inflation rate, the interaction of exchange rate volatility and inflation, and gross capital formation. To express the re-parameterized form of Eqn. (2), the below equation is written as follows:

$$\Delta lnGDP_t = \alpha + \vartheta lnGDP_t + \vartheta X'_t + \sum_{j=t}^{\rho} \alpha_j \, \Delta lnGDP_{t-1} + \sum_{j=t}^{q} \gamma_j \, \Delta X'_{t-1} + \varepsilon_t \quad (3)$$

From Equation (3), we derived Eqn. (4) to represents ϑ_j, γ_j, $\alpha *_j$ and $\gamma *_j$ respectively.

$$\vartheta_j = -\left(1 - \sum_{j=t}^{\rho} \alpha_j\right); \gamma_j = \frac{\sum_{j=t}^{q} \emptyset_j}{1 - \sum_{j=t}^{\rho} \alpha_j}; \alpha *_j = -\sum_{j=t}^{\rho} \alpha_j \text{ and } \gamma *_j = -\sum_{j=t}^{q} \gamma_j \quad (4)$$

To determine and explain how economic growth adjust to disequilibrium in the short run to the long run association, Eqn. (5) is written as follows:

$$\Delta lnGDP_t = \alpha + \vartheta_t (lnGDP_{t-1} - \vartheta_t X'_t) + \sum_{j=t}^{\rho} \alpha_j \, lnGDP_{t-1} + \sum_{j=t}^{q} \gamma_j \, X'_{t-1} + \varepsilon_t \quad (5)$$

where $\vartheta_t (lnGDP_{t-1} - \vartheta_t X'_t)$ indicates and explains how the dependent variable adjusts to the speed of instability that may occur in the short run to the long run association, while ϑ_t is the coefficient of the error correction term (ECT). The result of the ϑ_t is expected to be statistically significant and negative, i.e., $\vartheta_t < 0$. Where this occurs, then, there a is long run cointegration among $lnGDP_t$ and X'_t.

3.3 Exchange rate volatility

To generate exchange rate volatility data, autoregressive conditional heteroskedasticity (ARCH) would have been a suitable method for this purpose, but there is always a negative outcome in the coefficient results when analyzed using the ARCH method (Katusiime et al., 2016; Ebenezer, 2022). Hence, Bollerslev (1986) extended the ARCH model to include generalized autoregressive conditional heteroskedasticity (GARCH). This method has been extensively used in the literature because it allows changes over time, poses conditions on the variance, and has the power to cater for clustering volatility (Lean and Ehigiamusoe 2019). The GARCH

technique is very useful for modeling exchange rate volatility and changes in inflation (Ibrahin 2017; Ebenezer 2022). The GARCH (1,1) of the exchange rate is expressed as follows:

$$EXC_t = \alpha_0 + \sum_j^{\rho} \alpha_1 EXC_{t-1} + \varepsilon_t \quad (6)$$

$$\delta_t^2 = \omega_0 + \sum_j^{\rho} \emptyset\, \varepsilon_{t-1}^2 + \sum_j^{q} \beta\, \delta_{t-1}^2 \quad (7)$$

In the above equation. (6), EXC_t indicates the exchange rate, and EXC_{t-1} represents one lag period of the exchange rate, and ε_t indicates the stochastic error term. Also, in Eqn. (7), δ_t^2 represents one period lead ahead of exchange rate variance as a result of previous information; the GARCH form (previous volatility) is denoted as δ_{t-1}^2 , and ε_{t-1}^2 shows the past information regarding the (ARCH) volatility. Hence, the GARCH (1,1) equation above is used in generating the quarterly data set for exchange rate volatility.

4. Analysis of Results

4.1 Unit Root Tests

To ascertain the stationarity of the macroeconomic data used in this study, an Augmented Dickey Fuller (ADF) unit root test was employed. This is to establish the order of integration of the variables used in the study so that appropriate econometric techniques are employed. To also cover the structural changes in the periods covered in the study, a technique of Phillips-Perron unit root test was employed to test the stationarity of the macroeconomic variables used in the study. According to the results, at the 5 percent significant level, all the variables, EXCVOL, INF, and GCF, were stationary at level I(o) except the gross domestic product per capita (GDP), which was stationary at first difference I(1). With a mixture of I(o) and I(1), the Autoregressive Distributed Lag (ARDL) model was employed based on the outcomes of the ADF unit root test, as shown in Table 1 below.

Table 1

Unit root test results

	Augmented Dickey Fuller (ADF) Test		Phillips-Perron Test	
Variables	Level	First Difference	Level	First Difference
GDP	-3.5266 (0.1560)	-3.5266 (0.0104)*	-1.2041(0.6636)	-3.9703(0.0038)*
EXCVOL	-3.6266 (0.0004)*	–	3.2588(0.9810)	-4.1254(0.0025)*
INF	-3.5266 (0.0121)*	–	-2.9168(0.0621)	-10.6638(0.0001)*
GCF	-3.5236 (0.0149)*	–	-1.9323(0.3147)	-3.6219(0.0096)*

Source: Authors' estimation using Eviews 12.

Notes: The asterisked values are the probabilities values statistically significant at 5% level.

4.2. Discussion of ARDL Results

The results of the ARDL estimates are shown in Table 2 below. In the first instance, the result of the error correction term reveals a negative and significant outcome of −0.29. This implies that about 29% of the errors that occurred in the short-run equilibrium were able to be corrected in the long run. The result further shows the presence of long run relationship among the series tested in the study. To examine the short-run and long-run effects of exchange rate volatility and inflation on the Nigerian economy, the finding shows that exchange rate volatility over the years has been a major factor that retards the growth of the country. For instance, a 1% increase in exchange rate volatility decreases the Nigerian economy by 0.21%. One possible reason adduced to this may be the over-dependence of the country on imports, which poses excess demand for foreign currencies over supply. Another possible reason for this, as noted in the work of Revelli (2020), might be due to the unsecured economic environment in which Nigeria operates. For example, the activities of the Fulanis herdsmen that frequently disturb the farmers have led to a shortage of food production in the country, and this creates a food shortage, thereby making the country depend on other countries for survival.

More so, the unfavourable exchange rate of Nigerian currency to other foreign currencies may cause a high cost of importation, which leads to inflation and further affects economic activities in several ways, such as: first, an increase in the cost of production of goods and services thereby leads to a likely reduction in the workforce. Second, due to the increase in the cost of goods and services, demand may likely reduce, all things being equal. Third, there may be a likelihood that products produced within the country with a high exchange rate or instability may be unattractive to foreign customers, thereby affecting the growth of economic activities in the local country.

To buttress these assertions, some empirical evidence arrived at the conclusion that exchange rate volatility, especially in developing economies, impedes economic growth [see Kacperczk and Schnabl (2010); Kabundi and Mlachila (2018); Olamide et. al. (2022)}]. Hence, there is a need for the government to quickly address this situation by coming up with a monetary policy that gears towards exchange rate stability. This could be achieved in two ways: First, by reducing the high demand for foreign currencies. Second, encourage mass production of exported short-term farm products. This could be achieved through public-private partnership initiatives, and the initiatives will help the government earn more foreign earnings and further reduce exchange rate instability. Based on the empirical outcome of the relationship between inflation and the Nigerian economy, a significant negative result was revealed, showing that inflation adversely retards the economy of Nigeria. This implies that a 1% increase in inflation reduces the Nigerian economy by 0.16%. Previous works in the literature revealed that one of the major economic problems in many of the sub-Saharan African countries is inflation, which impedes the rate of economic growth in the region [see Fatai and Akinbobola (2015), Bittencourt et al. (2015), and Moyo and Roux (2019)]. In the Nigerian context, the inflationary effect has caused many citizens to find life extremely difficult to cope with. This is obvious from the skyrocketing prices of goods and services while many people's incomes remain stagnant, especially for salary earners. By doing so, citizens purchasing power parity and standard of living have drastically decreased.

Our findings agreed with the empirical findings of Fatai and Akinbobola (2015). In contrast, Uddin and Rahman (2023) revealed a positive relationship between inflation and economic growth. Also, the results of the interactions between exchange rate volatility and inflation revealed a significant negative effect on the economic growth of Nigeria. Findings showed that a 1% increase in the interactions of exchange rate instability and inflation decreased economic growth by 0.28%. This is not surprising because most economic activities that produce growth will be highly affected once inflation is on the high side, coupled with exchange rate volatility, because it will cause low demand. This is supported by Keynes theory, which opined that the major cause of economic decline is a fall in aggregate demand for goods and services. That is why he suggested that in order to improve the economy, aggregate demand must increase and savings must be discouraged, especially during the period of recession. Although many authors have not been able to empirically study the interaction of exchange rate volatility and inflation on economic growth, we included investment in our study because it is a critical growth determinant in any economy. Therefore, the study supports a positive and significant impact of gross capital formation on the economic growth of Nigeria. Findings show that a 1% increase in gross capital formation increases economic growth by 0.14%. With this outcome, investment within the country must be a top priority. Several studies in the literature also support this result (Olabisi, 2017; Aslan and Altinoz, 2021).

Table 2

ARDL estimation results

Long-run results				
Dependent Variable = $lnGDP_t$				
Variable	Coefficient	Std. Error	T-Statistic	Prob-Value
Long-run results				
Constant	−0.14	0.02	−0.05	0.18

$EXCVOL$	−0.21	0.03	0.23	0.02*
INF	−0.16	0.06	−0.02	0.04*
$INTER$	−0.28	0.03	−0.12	0.01*
GCF	0.14	0.02	2.10	0.03*
				Short-run results
ECT	−0.29	0.01	1.10	0.01*
$\Delta EXCVOL$	−0.24	0.21	1.17	0.21
ΔINF	−0.19	0.08	−0.80	0.18
$\Delta INTER$	−0.12	0.31	2.34	0.11
ΔGCF	0.53	0.23	2.14	0.13

Source: Authors' estimation using Eviews 12

Note: The asterisked values represent the probability values at 5% significant level

4.3. Diagnostic Tests

To determine whether the ARDL model employed in the study is fit and suitable for the study, the following diagnostic tests are performed: Heteroscedasticity, autocorrelation, normality, and stability tests. Results from Table 3 show that the null hypotheses of both heteroscedasticity and serial correlation should not be rejected. Therefore, the ARDL model is suitable for estimation and analysis. More so, Figures 1 and 2 indicate the outcome of normality and stability tests. The probability value of 0.7977 in the normal distribution figure indicates that the data used for the study are normally distributed. More so, the results of the CUSUM test indicate that the ARDL model is stable in the long run.

Table 3

Indicates the heteroscedasticity and serial correlation results

Heteroscedasticity Test: Breusch-Godfrey	
F-statistic	0.7063(0.8951)
Ho: The variance of the residuals is homogenous	
H1: The variance of the residuals is not homogenous	
Serial correlation LM Test: Breusch-Godfrey	
Ho: The errors are uncorrelated between the explanatory variables	
H1: The errors are correlated between the explanatory variables	
F-statistic	6.1369(0.4511)

Source: Authors' estimation using Eviews 12

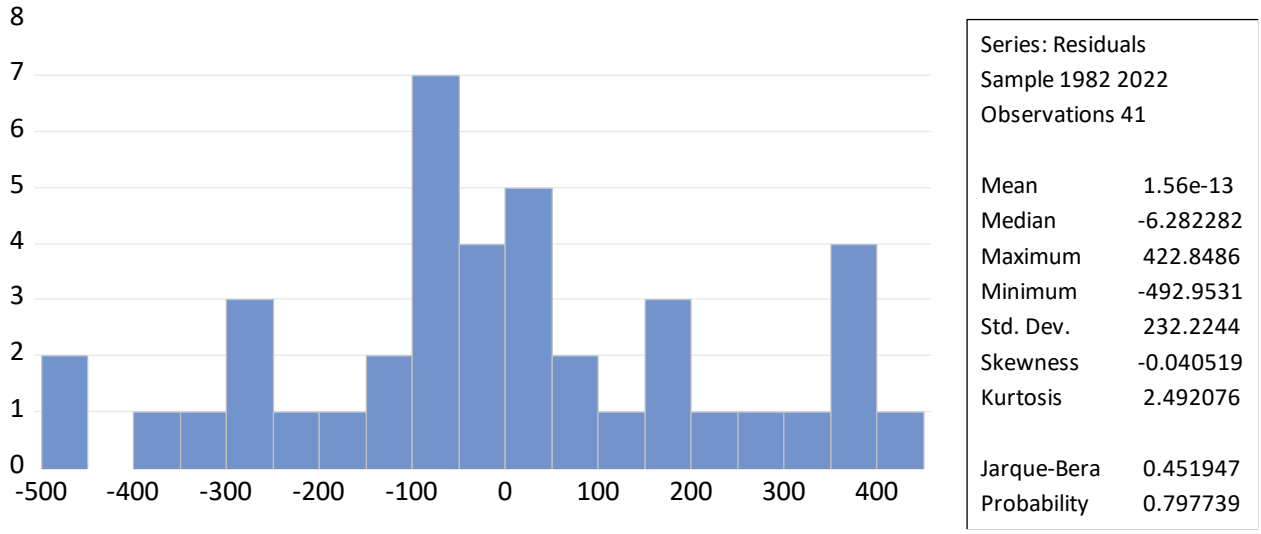


Fig. 1. Indicates the normality test result
Source: Authors' estimation using Eviews 12

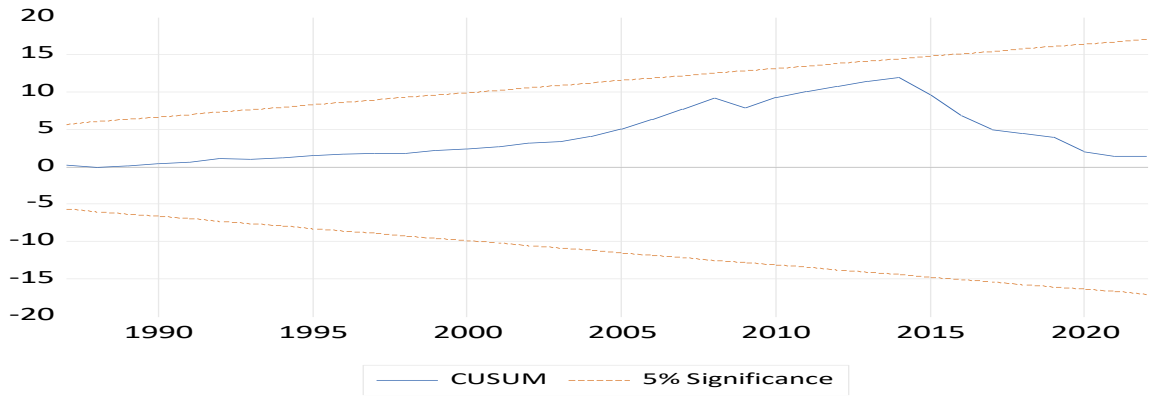


Fig. 2. Shows stability of the ARDL model
Source: Authors' estimation using Eviews 12

5. Conclusion

This study examines the impact of exchange rate volatility and inflation on the Nigerian economy from 1985 to 2022. Specifically, the study objectives are two. First, examine the relationships between exchange rate volatility, inflation, and the Nigerian economy. Second, determine the impact of the interaction of exchange rate volatility and inflation on the Nigerian economy. The autoregressive distributed lags model (ARDL) estimation technique of econometric analysis was employed. Our findings conclude that exchange rate volatility and inflation adversely affect the growth of the Nigerian economy. In view of this, cost-push inflation can be ascertained because the country relies so much on the importation of major raw materials for production. Aside from this, the high demand for foreign currencies by citizens for foreign education and health services also contributed to the overdependence on foreign currencies and exchange rate volatility. Inflation reduces citizens purchasing power parity and standard of living due to the high cost of goods and services. The imbalances in the exchange rate and inflation in Nigeria have the possibility of spreading to other neighbouring African countries that depend on the country for economic activities in energy and other areas. For many developing countries to experience economic advancement, it was suggested in the previous economic literature that developing countries must guarantee a stable exchange rate with reasonable inflation (Caselli and Roitman, 2019; Olamide, Ogujiuba, and Maredza, 2022). The positive influence of gross capital

formation on economic growth was revealed in the study. This shows that investment promotes economic growth, as revealed in the extant literature (Olabisi 2017; Aslan and Altinoz 2021).

From the findings of this study, there are several policy implications. First, the negative impact of exchange rate volatility on economic growth indicates that in Nigeria, the monetary and fiscal transmission policies to strengthen local currencies by the financial institutions are weak. Second, the policies against importation introduced by the last administration and still maintained by the current government are not yielding a good result, especially in the importation of food items such as rice, turkey, etc. Institutions in charge of policy implementation on exchange rate stability and bans on importation should be up to the task in discharging their responsibilities. More so, the government may impose a strict measure in dealing with any public officer found culpable in the discharge of duties and responsibilities in these regards. In addition, macroeconomic policies that promote mass short-term farm production for export purposes will increase the country's foreign earnings and cause the local currency to gain value. Also, the raw materials for production, demand for education, and health services should be sourced locally. Policies that discourage foreign education and health, especially for public officers, should be introduced by the government. Finally, this study has established the impact of exchange rate volatility and inflation separately on economic growth. It also adds to the existing economic literature by providing evidence based on the interaction of exchange rate volatility and inflation on the Nigerian economy.

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