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FOREIGN EXCHANGE RATE INSTABILITY AND ECONOMIC GROWTH IN NIGERIA (2000-2023)

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ABSTRACT
This study investigated the effect of exchange rate instability on the Nigerian economy from 2000 to 2023, employing an ex-post-facto research design that analyzes existing data from reputable sources such as the Central Bank of Nigeria (CBN) and the World Bank. The research addressed the critical macroeconomic variables influencing Nigeria's Gross Domestic Product (GDP) and utilizes a judgmental sampling technique to compile data over a 24-year period. The study utilized descriptive statistics, unit root tests, and Least Squares regression to analyze the data. Diagnostic checks, including the Breusch-Godfrey and Breusch-Pagan-Godfrey tests, were conducted to ensure the model's validity and robustness. The study found that monetary policy rate (MPR) instability has a significant positive effect on GDP in Nigeria, while interest and inflation rate instabilities have no statistically significant impact. This highlights MPR instability as the primary monetary variable influencing economic growth. Consequently, the study suggested that the Nigerian government should enforce policies to stabilize the exchange rate, utilizing interventions in the foreign exchange market and maintaining adequate foreign reserves. The Central Bank of Nigeria should adapt its monetary policy framework to respond effectively to exchange rate fluctuations.

INTRODUCTION
The Nigerian economy, one of the largest in Africa, is a mixed economy driven by sectors including oil, agriculture, telecommunications, and services. Traditionally reliant on oil exports, Nigeria is highly vulnerable to global oil price fluctuations, impacting fiscal stability and growth. In recent years, the government has been focused on diversifying economic activities by strengthening non-oil sectors, such as agriculture and manufacturing, to reduce dependence on oil revenue (Eke, Graham-Kingsley, & Odukwu, 2023). Despite these efforts, challenges such as inflation, unemployment, and infrastructural deficiencies persist, complicating economic development. Nigeria's large and youthful population provides potential for substantial economic growth, yet achieving sustainable progress requires addressing issues like poverty, corruption, and policy inconsistencies to build resilience and promote inclusive development.

Exchange rate instability in Nigeria, characterized by fluctuations in the monetary policy rate, interest rates, and inflation, remains a pressing economic concern, given its impact on inflation and general economic stability. Various studies highlight how Nigeria's reliance on oil revenue makes it highly susceptible to exchange rate volatility. For instance, oil price fluctuations significantly influence the Naira's value, creating a cyclical impact on inflation rates and overall economic performance. As noted by researchers such as Bello and Aliyu (2019), exchange rate instability has driven inflation in consumer prices, which underscores the need for targeted policies, particularly in response to depreciation or devaluation phases in Nigeria's economic cycle. Their findings suggest that exchange rate regimes and inflation are closely linked, with inflationary pressures worsening when the exchange rate depreciates sharply, as seen in various monetary policy decisions over the years

Additionally, recent studies by Valogo, Duodu, Yusif, and Baidoo (2023) utilize models that integrate inflation targeting frameworks, revealing that targeted inflation policies may help mitigate exchange rate instability's impacts on inflation and interest rates in developing economies. In Nigeria, frequent changes in the monetary policy rate and interest rates disrupt investment flows and the economy's

productive sectors. Stabilizing the exchange rate, therefore, requires coordinated macroeconomic policies that consider Nigeria's unique dependence on imports and high sensitivity to oil price shocks. Policymakers have thus been urged to prioritize inflation targeting and build strategies that align exchange rate stability with broader macroeconomic goals, as these factors remain crucial to Nigeria's long-term economic stability.

Statement of the Problem

Continuous depreciation and instability have been characteristics of the naira currency rate. The population's standard of living has decreased as a result of this one action, and the cost of manufacturing has gone up, contributing to cost push inflation. The foreign competitiveness of non-oil exports is weakened by exchange rate volatility, which also makes planning and forecasting challenging for the Nigerian economy at both the macro and micro levels (Nwobia, Ogbonnaya, and Okoye, 2020).

The massive influx of foreign cash earnings that came with Nigeria's oil boom in the 1970s caused the government to shift its focus from traditional agricultural products to the extraction of crude oil. Many of the producers of various commodities, including cotton, oil palm, and groundnuts, shifted their operations to take advantage of the new economic opportunities brought about by higher oil profits. Due to this development, agricultural production decreased, which in turn caused a loss in the amount and value of conventional export goods. This leads to a mono-product economy where crude oil earnings alone account for more than 80% of the national revenue. Nigeria has a sizable population, a high rate of insurgency, and imports almost everything, including toothpicks and toilet paper. Consuming imported things has actually started to be seen as a status signal in some places. Previous studies on exchange rate instability and its impact on Nigeria's economy have often focused on limited variables, shorter timeframes, or used simpler analytical models like Ordinary Least Squares (OLS), which may overlook short- and long-term effects. For instance, while Nwobia, Ogbonnaya, and Okoye (2020) and Bello and Aliyu (2019) examined the relationship between exchange rates and economic indicators, they did not comprehensively address long-term equilibrium and adjustment dynamics, nor did they employ models that capture both short-term and long-term impacts. This study addresses these gaps by adopting an ex-post-facto design using the Autoregressive Distributed Lag (ARDL) model and Error Correction Regression, providing a deeper analysis of the cointegration and error correction aspects in exchange rate fluctuations. Analyzing a 24-year period (2000-2023) also allows us to capture longer-term economic shifts and cycles, offering a more robust understanding of the persistence and adjustments to exchange rate volatility within the Nigerian economy, thus extending the insights from prior research.

Conceptual Framework

Conceptual framework is a model of presentation where the researcher conceptualizes or represents the effect of the variables diagrammatically.

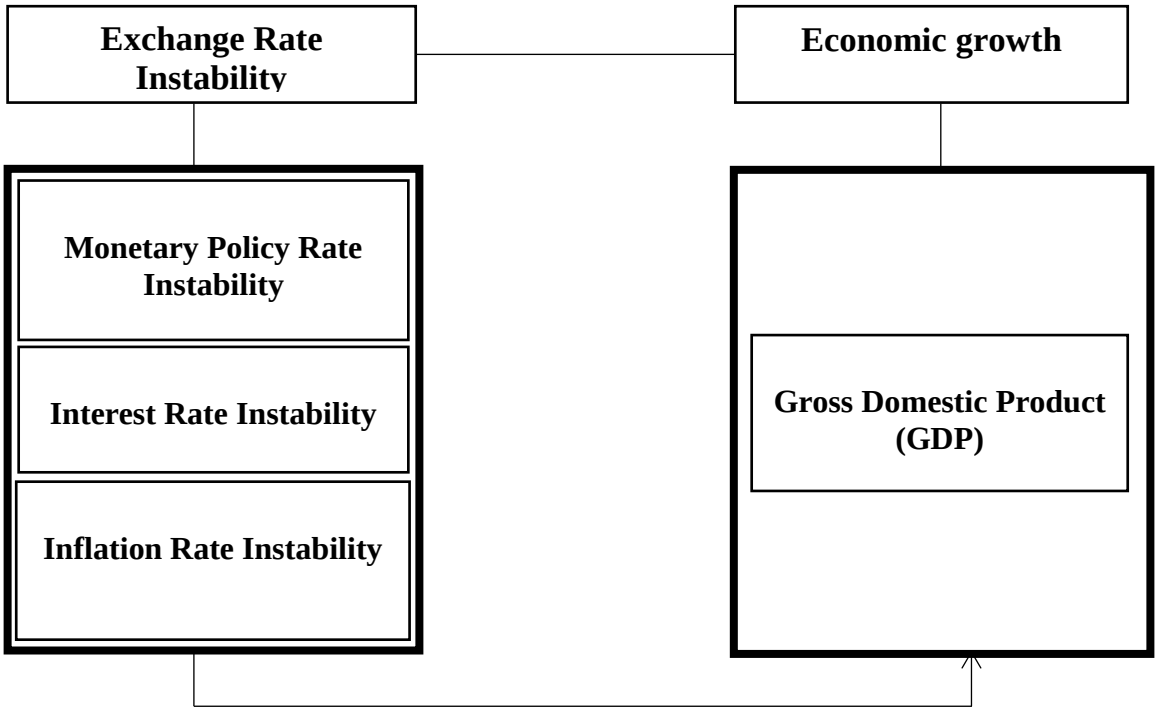


Figure 1.1 Conceptual framework of the effect of Exchange Rate Instability on the Nigerian Economy.
Source: Bello and Aliyu (2019), and Valogo et al. (2023)

Objectives of the Study

The broad objective of the study is to investigate the effect of Exchange Rate Instability on the Nigerian Economy from 2000 to 2023. The Specific Objectives were to:

1. Determine the effect of Monetary Policy Rate Instability on GDP in Nigeria.
2. Ascertain the effect of Interest Rate Instability on GDP in Nigeria.
3. Examine the effect of Inflation Rate Instability on GDP in Nigeria.

Statement of Hypotheses

In line with the objectives above, the following hypotheses guided this study.
HO_1: Monetary Policy Rate Instability has no significant effect on GDP in Nigeria.
HO_2: Interest Rate Instability has no significant Effect on GDP in Nigeria.
HO_3: Inflation Rate Instability has no significant Effect on GDP in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Exchange rate instability

This refers to the frequent fluctuations in a country's currency value relative to others, affecting trade, investment, and price stability. In Nigeria, where oil exports form the backbone of foreign exchange earnings, shifts in global oil prices directly influence the Naira's stability, leading to inflationary pressures and economic volatility (Bello & Aliyu, 2019). When the currency depreciates, import costs rise, creating a ripple effect on domestic prices. Valogo et al. (2023) further suggest

that inflation targeting, alongside consistent monetary policies, can mitigate the adverse effects of exchange rate instability on inflation and interest rates. This persistent instability impacts Nigeria's financial markets, influencing monetary policy adjustments and, consequently, economic growth prospects.

Monetary Policy Rate

The Monetary Policy Rate (MPR) is the benchmark interest rate set by a country's central bank to guide other interest rates within the economy, influencing lending, inflation, and economic growth. In Nigeria, the Central Bank of Nigeria (CBN) uses the MPR to maintain price stability and support sustainable economic growth, adjusting it based on economic conditions. A higher MPR generally increases borrowing costs, reducing money supply and controlling inflation, while a lower MPR can encourage borrowing and investment but may increase inflation risk (Olorunsola & Lawal, 2021). According to Eze and Okonkwo (2020), adjustments to the MPR significantly impact sectors dependent on loans, as changes influence the cost of borrowing, household consumption, and overall economic activity. Thus, the MPR serves as a critical tool for managing Nigeria's economic stability in response to both domestic and international financial pressures.

Exchange rate instability

Exchange rate refers to the price of one currency in terms of another and is a crucial factor in international trade, affecting import and export prices and, consequently, a country's economic balance. In Nigeria, exchange rate fluctuations have significant implications due to the country's dependence on oil exports, which constitute a large portion of foreign earnings. As observed by Adedokun (2020), exchange rate instability can lead to inflationary pressures, especially when currency depreciation increases import costs for essential goods, impacting general price levels and economic stability. According to Ebi and Emmanuel (2021), managing exchange rate stability is vital for Nigeria's economic growth, as erratic exchange rates discourage foreign investment, impact inflation, and strain local businesses dependent on imported raw materials. Therefore, a stable exchange rate is essential for fostering a predictable economic environment conducive to investment and growth.

Interest Rate

Interest rates represent the cost of borrowing or the return on investment for funds, determined by a country's central bank and influenced by market demand for credit. In Nigeria, interest rates are crucial for guiding economic activity as they impact consumer spending, business investment, and inflation control. High-interest rates can curb borrowing and spending, helping to control inflation, yet they can also restrict economic growth by limiting access to affordable credit for businesses (Akinlo & Lawal, 2020). Conversely, lower rates can stimulate economic growth but may lead to inflationary pressures if the money supply increases too rapidly. As noted by Ojo and Fapohunda (2021), the Central Bank of Nigeria adjusts rates to achieve a balance between economic growth and inflation control, making interest rate policies essential for stabilizing Nigeria's economy in response to domestic and global economic pressures.

Inflation Rate

One important economic indicator is the inflation rate, which calculates the percentage change in the level of prices for goods and services over a given time period. It represents a currency's purchasing power; more inflation denotes a decline in purchasing power. Since inflation affects interest rates, consumer spending, and total economic growth, it is essential to comprehend it while developing economic policies. Demand-pull, cost-push, and built-in inflation are the three types of inflation that result from various economic circumstances and forces, according to the World Bank (2023).

Economic growth-Gross Domestic Product

This is a fundamental measure of a country's economic health, encompassing the total value of all goods and services produced within a nation's borders over a specified period. In Nigeria, GDP dynamics are closely tied to the oil and gas sector, which drives significant revenue, although it accounts for a limited share of employment and economic diversification. This dependence on oil revenue makes Nigeria particularly vulnerable to global oil price fluctuations, which influence GDP growth and economic stability (Olawale & Garba, 2022). Fluctuations in the GDP are often linked to shifts in international oil markets, with downturns in oil prices impacting government revenues, foreign exchange reserves, and overall economic growth, revealing the critical need for diversified economic activities (Akinmulegun, 2018).

Efforts to diversify the economy have highlighted the agricultural and services sectors as potential areas of growth. As Alege and Ogundipe (2020) discuss, these sectors can provide a stabilizing influence on Nigeria's GDP by promoting sustained growth through less volatile, non-oil sectors. By investing in these areas, Nigeria could increase resilience against external economic shocks, thereby promoting more stable economic growth over time. Diversifying GDP sources is crucial for reducing dependency on oil, fostering employment, and achieving sustainable economic development, aligning Nigeria's economic structure with global trends toward diversified economic bases that support long-term growth.

Theoretical Review

Purchasing Power Parity (PPP) theory

One relevant theory concerning exchange rate dynamics is the **Purchasing Power Parity (PPP)** theory, which posits that exchange rates should adjust to equalize the purchasing power of different currencies. According to PPP, in the long term, the exchange rate between two currencies will move towards the rate that would equalize the prices of a basket of goods and services in both countries (Dornbusch, 1980). This theory is particularly relevant for Nigeria, where fluctuations in the exchange rate can significantly impact inflation and overall economic stability. When the naira depreciates, the cost of imported goods rises, leading to inflationary pressures that can affect purchasing power and consumption patterns (Ogunleye & Fadare, 2020).

Empirical studies have shown that deviations from PPP can have notable implications for economies like Nigeria's, especially in terms of trade balance and investment flows. For instance, as exchange rates fluctuate, businesses may face increased costs for imported raw materials, affecting their competitiveness in both local and international markets (Akinlo & Akinlo, 2021). Thus, understanding PPP is crucial for policymakers aiming to stabilize the naira and mitigate the adverse effects of exchange rate instability on the Nigerian economy.

Empirical Review

Nwobia, Ogbonnaya, and Okoye (2020) examined how Nigeria's foreign trade was affected by changes in the exchange rate between 2000 and 2019. They discovered that the exchange rate had a negative effect on external trade, while the balance of payments and inflation rate had a substantial impact on GDP.

Adedokun (2020) investigated the impact of exchange rate fluctuations on the Nigerian economy through regression analysis. The findings revealed significant negative effects of exchange rate volatility on inflation and economic growth, suggesting that such instability leads to increased inflationary pressures. The study recommended implementing robust monetary policies to stabilize the naira and mitigate adverse economic effects.

Ebi and Emmanuel (2021) investigated the relationship between exchange rate volatility and inflationary impacts on economic growth in Nigeria using econometric modeling. The results indicated a strong positive correlation between exchange rate fluctuations and rising inflation rates,

underlining the significant influence of volatility on economic stability. The authors recommended that policymakers focus on stabilizing the exchange rate to foster sustainable economic growth.

Olorunsola and Lawal (2021) investigated the effects of monetary policy rate adjustments on financial stability in Nigeria, employing a mixed-methods approach that combined qualitative interviews with quantitative data analysis. The findings highlighted that while high monetary policy rates could stabilize inflation, they might also limit credit access, hindering economic activity. The authors suggested a balanced approach in monetary policy adjustments to encourage growth while ensuring financial stability.

Eze and Okonkwo (2020) investigated the relationship between monetary policy rate adjustments and economic growth in Nigeria using panel data analysis. Their results indicated that timely adjustments to the monetary policy rate could stimulate economic growth and effectively manage inflation. The authors recommended that the Central Bank of Nigeria regularly review and adapt the monetary policy rate to align with changing economic conditions.

Akinlo and Lawal (2020) investigated the impact of interest rate policies on economic growth in Nigeria, utilizing historical data analyzed through regression techniques. The findings demonstrated that high-interest rates adversely affect investment, consequently hindering economic growth. The authors recommended lowering interest rates to encourage borrowing and investment, thus stimulating economic development.

Ojo and Fapohunda (2021) investigated interest rate dynamics and their implications for economic stability in Nigeria through time-series analysis. The study concluded that interest rate volatility creates uncertainty that adversely affects investment decisions and overall economic stability. The authors recommended implementing measures to stabilize interest rates to enhance economic confidence and growth.

Bello and Aliyu (2019) investigated the effects of exchange rate volatility on inflation in Nigeria using econometric modeling. The results showed that fluctuations in exchange rates significantly contribute to inflation, impacting economic stability. The authors emphasized the need for effective exchange rate management policies to mitigate inflationary impacts.

Valogo et al. (2023) investigated the nexus between exchange rates and inflation in developing economies, including Nigeria, using a panel dataset. The findings revealed that instability in exchange rates exacerbates inflation, undermining economic stability. The authors recommended strengthening exchange rate management practices to maintain low inflation levels and support economic growth.

Olawale and Garba (2022) investigated the relationship between oil revenue, exchange rates, and economic growth in Nigeria through regression analysis. The study found that fluctuations in exchange rates negatively affect oil revenue, subsequently hindering economic growth. The authors recommended implementing policies to stabilize the exchange rate to ensure consistent revenue generation from oil.

Akinmulegun (2018) investigated the relationship between oil revenue, global price changes, and economic growth in Nigeria using qualitative analysis. The findings highlighted the necessity of stable exchange rates for effectively managing the implications of changing oil revenues on the economy. The author recommended policies aimed at stabilizing exchange rates to support sustainable economic growth.

Alege and Ogundipe (2020) investigated the contributions of agriculture and services to economic growth in Nigeria, considering the role of exchange rate stability through sectoral analysis. The study found that stable exchange rates are crucial for promoting growth in these sectors, as volatility disrupts investment decisions. The authors recommended policies to ensure exchange rate stability to foster growth in agriculture and services.

Ogunleye and Fadare (2020) investigated the relationship between exchange rate fluctuations and inflation dynamics in Nigeria using econometric analysis. The findings indicated that exchange rate fluctuations significantly contribute to inflationary pressures within the economy. The authors

advocated for stabilization of the exchange rate as a means to effectively manage inflation and support economic growth.
Akinlo and Akinlo (2021), investigated the impact of exchange rate volatility on economic growth in Nigeria using regression analysis. The results revealed that increased exchange rate fluctuations negatively affect economic growth by creating uncertainties that hinder investment. The authors recommended measures to stabilize the exchange rate to promote investment and facilitate economic growth.

Gaps in Previous Studies

Most prior studies predominantly focused on the impact of exchange rate volatility**,** interest rate fluctuations**,** and inflation dynamics on economic growth without isolating the instability effects of specific monetary variables like the monetary policy rate (MPR). For example, studies by Adedokun (2020)**,** Ebi and Emmanuel (2021)**,** and Akinlo and Akinlo (2021) emphasized exchange rate volatility as a determinant of economic performance, while Akinlo and Lawal (2020) and Ojo and Fapohunda (2021) concentrated on interest rate effects. However, these studies often lacked a comparative analysis of multiple monetary instabilities within a unified framework**,** thereby limiting the ability to determine which factor exerts the most significant influence on economic growth. Moreover, many earlier works failed to utilize log-transformed variables and robust regression techniques that could account for scale sensitivity and non-linearity in macroeconomic data.
The present study fills these gaps by offering a comprehensive empirical analysis of the separate effects of monetary policy rate instability, interest rate instability, and inflation rate instability on GDP**,** using logarithmic transformations and least squares regression for greater accuracy and interpretability. Unlike previous studies, it provides clear statistical comparisons among the three forms of monetary instability, identifying MPR instability as the most significant predictor of GDP changes in Nigeria. By incorporating diagnostic tests such as the Breusch-Godfrey Serial Correlation LM Test and Breusch-Pagan-Godfrey Heteroskedasticity Test, the study also ensures the reliability and robustness of its results. In doing so, it contributes fresh insights into monetary policy effectiveness and offers a policy-relevant prioritization of which monetary tools should be stabilized to promote economic growth.

METHODOLOGY

The study adopted ex-post-facto research design aimed at investigating the effect of exchange rate on the economy of Nigeria. Ex-post-facto research design use existing data in analyzing the relationship between the variables of study such that the data cannot be manipulated by the researcher. The population of this study focuses on the entire Nigerian economy, examining the key macroeconomic variables that influence the nation's GDP. The population of this study focuses on the entire Nigerian economy, examining the key macroeconomic variables that influence the nation's gross domestic product. The study utilized data sourced from reputable institutions, including the Central Bank of Nigeria (CBN) and the World Bank, ensuring that the data are reliable and reflective of the broader economic environment. The analysis covers a 24-year period, from 2000 to 2023, which provides a comprehensive view of long-term trends and the impacts of the study variables. However, relevant data for the study were obtained using judgmental sampling technique, a sample of 24 years' period from 2000-2023. Secondary data were obtained basically from the CBN bulletin and World Bank for the period of 24years. The study utilized descriptive statistics, unit root tests, and Least Squares regression to analyze the data. Diagnostic checks, including the Breusch-Godfrey and Breusch-Pagan-Godfrey tests, were conducted to ensure the model's validity and robustness. The model specification is as stated below;

Model 1: $GDP = \beta_0 + \beta_1 MPRI_{bt} + \beta_2 ITRI_{bt} + \beta_3 IFRI_{bt} + U_t$ 1

Where:
MPRI = Monetary Policy Rate Instability
ITRI = Interest Rate Instability

IFRI= Inflation Rate Instability
GDP = Gross domestic product (Real)
β_0 & a_0 = Intercept of the relationship/the constant term
t = Period of time (2000-2023)

RESULTS AND DISCUSSION

Data analyzed here are the properties of Exchange Rate Instability (Monetary Policy Rate Instability, Interest Rate Instability and Inflation Rate Instability), Economic growth (GDP) in Nigeria.

Table 1: Descriptive Statistics

	GDP	MPRI	ITRI	IFR
Mean	4.719783	0.796427	0.960305	-0.755422
Median	4.773875	1.051045	0.975377	-0.801017
Maximum	4.891739	1.273001	1.222716	-0.137630
Minimum	4.405354	0.000000	0.623249	-1.242604
Std. Dev.	0.152438	0.481873	0.156106	0.350722
Skewness	-0.700133	-0.996151	-0.407203	0.342116
Kurtosis	2.170695	2.188734	2.647282	1.805281
Jarque-Bera	2.648490	4.627423	0.787667	1.895526
Probability	0.266004	0.098894	0.674466	0.387607
Sum	113.2748	19.11424	23.04731	-18.13014
Sum Sq. Dev.	0.534456	5.340638	0.560488	2.829136
Observations	24	24	24	24

The descriptive statistics for Nigeria's economy, specifically examining the Gross Domestic Product (GDP), Monetary Policy Rate Instability (MPRI), Interest Rate Instability (ITRI), and Inflation Rate Instability (IFR), provide insights into economic stability over the observation period. The average GDP is 4.72 billion Naira, with moderate fluctuations indicated by a standard deviation of 0.15. MPRI and ITRI display mean values of 0.80 and 0.96, respectively, with ITRI showing relatively more stability given its lower standard deviation (0.16) compared to MPRI (0.48). IFR, with a mean of -0.76 and moderate variability (standard deviation of 0.35), reveals a skew towards negative inflationary conditions, indicating frequent deflationary periods. The skewness values suggest asymmetrical data distribution for all variables, especially for MPRI (skewness of -0.996), reflecting an uneven distribution in interest rate changes. Kurtosis values close to 2.2 indicate near-normal distributions, with moderate deviations for IFR. The Jarque-Bera test results suggest that none of the variables significantly deviate from normality (p-values > 0.05). These findings depict Nigeria's economy as moderately stable, with GDP performance consistently above 4 billion Naira, while monetary and inflation instability metrics reflect some variation but generally maintain control.

Table 2: Group unit root test: Summary

Series: GDP, MPRI, ITRI, IFR
Date: 10/27/24 Time: 17:51
Sample: 1 24
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.47709	0.0000	4	96
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.18979	0.0007	4	96
ADF - Fisher Chi-square	26.6595	0.0008	4	96
PP - Fisher Chi-square	23.8369	0.0024	4	96

** Probabilities for Fisher tests are computed using an asymptotic Chi
-square distribution. All other tests assume asymptotic normality.

The group unit root test results indicate that the variables GDP, Monetary Policy Rate Instability (MPRI), Interest Rate Instability (ITRI), and Inflation Rate Instability (IFR) are stationary, implying stability and consistency over time, which is essential for meaningful regression analyses. The Levin, Lin, and Chu t* statistic of -5.47709 (p = 0.0000) rejects the null hypothesis of a common unit root, confirming stationarity across all series under a shared process assumption. Similarly, tests for individual unit root processes—Im, Pesaran, and Shin W-stat (-3.18979, p = 0.0007), ADF-Fisher Chi-square (26.6595, p = 0.0008), and PP-Fisher Chi-square (23.8369, p = 0.0024)—all reject the null hypothesis of non-stationarity. These results suggest that the data do not contain unit roots and are stable, making them reliable for further econometric modeling and analyses, such as examining the relationships between economic indicators and instability factors in Nigeria.

Hypothesis Testing:

$H0_1$: Monetary Policy Rate Instability has no significant effect on GDP in Nigeria.
$H0_2$: Interest Rate Instability has no significant Effect on GDP in Nigeria.
$H0_3$: Inflation Rate Instability has no significant Effect on GDP in Nigeria.

Table 3 Dependent Variable: LOGGDP

Method: Least Squares
Date: 04/22/25 Time: 13:19
Sample: 1 24
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.720264	0.141980	33.24600	0.0000
LOGMPR	0.241757	0.038604	6.262503	0.0000
LOGITR	-0.223141	0.115789	-1.927125	0.0683
LOGIFR	-0.028143	0.039594	-0.710796	0.4854

R-squared	0.846412	Mean dependent var	4.719783
Adjusted R-squared	0.823373	S.D. dependent var	0.152438
S.E. of regression	0.064065	Akaike info criterion	-2.506829
Sum squared resid	0.082086	Schwarz criterion	-2.310486

		Hannan-Quinn	-
Log likelihood	34.08195	criter.	2.454739
F-statistic	36.73941	Durbin-Watson stat	2.143141
Prob(F-statistic)	0.000000		

Based on the results of the Least Squares regression analysis, the null hypothesis (H01) stating that monetary policy rate (MPR) instability has no significant effect on GDP in Nigeria is rejected**,** as the p-value (0.0000) for LOGMPR is less than 0.05. The positive coefficient (0.2418) implies that increases in MPR instability are associated with increases in GDP (in logarithmic terms), suggesting a statistically significant and positive relationship. This indicates that changes or volatility in monetary policy rate have a measurable impact on economic growth in Nigeria, potentially through the influence on investment and consumption patterns. Additionally, the high R-squared value (0.8464) signifies a strong explanatory power of the model.
Conversely, the null hypotheses for interest rate instability (H02) and inflation rate instability (H03) cannot be rejected at the 5% significance level. LOGITR has a p-value of 0.0683, which is marginally above 0.05, indicating a weak and statistically insignificant negative relationship with GDP. Similarly, LOGIFR has a p-value of 0.4854, showing no significant effect on GDP. Therefore, while interest rate instability may have some influence on GDP, the evidence is not strong enough to assert statistical significance, and inflation rate instability shows an even weaker relationship. These findings suggest that while monetary policy rate instability is a key driver of GDP in Nigeria, other forms of rate instability (interest and inflation) may not exert significant direct effects within the analyzed period.

Diagnostic test

Table 4 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.604639	Prob. F(2,18)	0.1015
Obs*R-squared	5.386754	Prob. Chi-Square(2)	0.0677

The Breusch-Godfrey Serial Correlation LM Test results indicate that there is no significant evidence of serial correlation in the residuals of the regression model. The F-statistic (2.6046) with a p-value of 0.1015 and the Obs*R-squared value (5.3868) with a p-value of 0.0677 both exceed the 0.05 significance level, suggesting that the null hypothesis of no serial correlation cannot be rejected. This implies that the model's residuals are not autocorrelated, and the estimates produced by the regression are reliable and not biased by the presence of serial correlation.

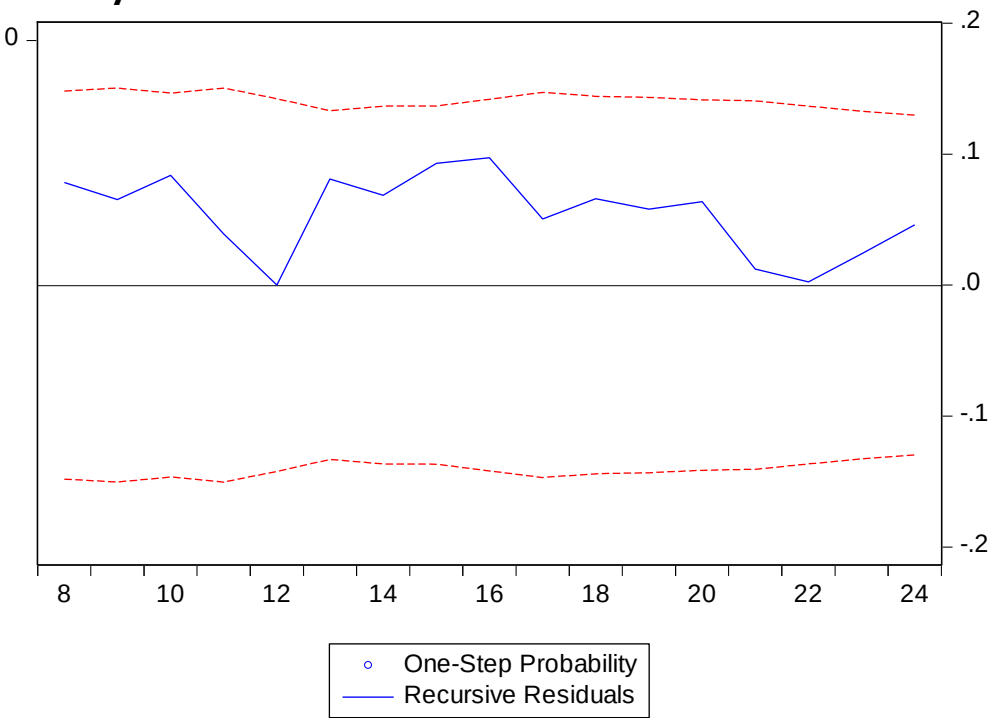
Table 5 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.372274	Prob. F(3,20)	0.7739
Obs*R-squared	1.269309	Prob. Chi-Square(3)	0.7364
Scaled explained SS	1.046292	Prob. Chi-Square(3)	0.7901

The results of the Breusch-Pagan-Godfrey heteroskedasticity test indicate that there is no evidence of heteroskedasticity in the model. The F-statistic (0.3723) with a p-value of 0.7739, the Obs*R-squared (1.2693) with a p-value of 0.7364, and the Scaled explained SS (1.0463) with a p-value of 0.7901 are all greater than the 0.05 significance level. This implies that the null hypothesis of homoskedasticity cannot be rejected, confirming that the variance of the residuals remains constant.

Therefore, the model meets the assumption of homoskedasticity, indicating that the regression results are stable and efficient.

Stability Test



Discussion of findings

The findings from our study revealed that monetary policy rate (MPR) instability significantly influences economic growth in Nigeria, while interest rate and inflation rate instabilities do not have a statistically significant effect. This outcome aligns with the work of Eze and Okonkwo (2020), who found that strategic adjustments in the monetary policy rate can stimulate growth and manage inflation effectively. Similarly, Olorunsola and Lawal (2021) highlighted that monetary policy rates, when properly managed, can foster economic stability, even though high rates might restrict access to credit. These studies, alongside our findings, underscore the importance of monetary policy as a dynamic tool for economic management in Nigeria. It also implies that the Central Bank's policy rate plays a more immediate role in shaping GDP trends than interest or inflation rates alone.

In contrast, the lack of significant impact from interest rate instability in our findings appears to contradict Akinlo and Lawal (2020) and Ojo and Fapohunda (2021), who documented adverse effects of interest rate fluctuations on investment and economic stability. Their findings suggest that volatile interest rates can deter long-term investments, yet our results did not confirm this effect at a statistically significant level. This discrepancy might be due to differences in the data period, modeling approach, or the degree of instability considered in each study. Similarly, our finding that inflation rate instability does not significantly affect GDP differs from the conclusions of Ebi and Emmanuel (2021) and Bello and Aliyu (2019), both of whom emphasized that exchange rate and inflation volatility exacerbate economic instability and erode growth. The divergence may reflect the lagged or indirect nature of inflation's influence on economic growth in the Nigerian context.

Furthermore, the strong emphasis on exchange rate stability in many of the reviewed studies, such as those by Adedokun (2020), Akinlo and Akinlo (2021), and Valogo et al. (2023), aligns with the broader consensus that exchange rate volatility plays a crucial role in determining macroeconomic performance. While our study specifically focused on monetary policy-related instabilities, the literature strongly supports the view that exchange rate management must be integrated with broader monetary strategies. In essence, our results contribute to the existing literature by reinforcing the centrality of MPR stability in influencing Nigeria's economic growth while suggesting

that interest and inflation rate instabilities, though potentially impactful, require deeper analysis to confirm their significance.

CONCLUSION AND RECOMMENDATIONS

The study investigated the effects of foreign exchange rate instability on economic growth in Nigeria using a Least Squares regression model. The results showed that monetary policy rate instability had a significant positive effect on economic growth, suggesting that fluctuations in monetary policy can influence how foreign exchange dynamics impact the broader economy. However, interest rate instability and inflation rate instability did not have statistically significant effects on economic growth during the study period. Diagnostic tests, including the Breusch-Godfrey serial correlation test and the Breusch-Pagan-Godfrey heteroskedasticity test, confirmed that the model was well-specified, with no issues of serial correlation or heteroskedasticity, thereby ensuring the validity of the regression results. Based on the findings, it was recommended that;

i. The Nigerian government should enforce policies to stabilize the exchange rate, utilizing interventions in the foreign exchange market and maintaining adequate foreign reserves. A stable exchange rate will enhance investor confidence and promote sustainable economic growth.
ii. Prioritizing the diversification of the Nigerian economy will reduce reliance on foreign exchange and mitigate the adverse effects of volatility. Investing in agriculture, manufacturing, and technology can create resilient economic structures and support local production.
iii. The Central Bank of Nigeria should adapt its monetary policy framework to respond effectively to exchange rate fluctuations. Regular assessments of macroeconomic indicators will allow for timely adjustments, ensuring inflation control while supporting economic growth.

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