American Journal of Applied Statistics and Economics (AJASE)

ISSN: 2992-927X (ONLINE)

VOLUME 5 ISSUE 1 (2026)

PUBLISHED BY
E-PALLI PUBLISHERS, DELAWARE, USA

American Journal of Applied Statistics and Economics (AJASE)

Volume 5 Issue 1, Year 2026
ISSN: 2992-927X (Online)
DOI: https://doi.org/10.54536/ajase.v5i1.7070
https://journals.e-palli.com/home/index.php/ajase

Analysing the Effects of Inflation, Interest Rate and Exchange Rate on Nigerian Economy

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Article Information

Received: December 07, 2025

Accepted: February 16, 2026

Published: May 08, 2026

Keywords

Economic Growth, Exchange Rate, Inflation Rate, Interest Rate, Nigeria

ABSTRACT

his study analysed the effects of inflation, interest rate and exchange rate on economic growth in Nigeria. The study employed Ordinary Least Square (OLS) method for regression analysis to determine the fixed and random effects of independent variables on dependent variable using annual time series data from 1990 – 2023. The results revealed that economic growth was negatively and significantly affected by inflation rate and negatively and insignificantly affected by interest rate while it was negatively and significantly affected by exchange rate. Based on the findings, the study therefore, recommends that monetary authorities in Nigeria should control inflation to stabilize prices, reduce bank rate to lower cost of borrowing and manage foreign exchange to stabilize local currency.

INTRODUCTION

The ultimate desire of every economy is to achieve internal and external macroeconomic stability. Macroeconomic stability can only be attained through the actualization of monetary policy objectives of economic growth, minimal inflation, reduction in unemployment and balance of payment equilibrium. Economists consensually agreed that achieving sustainable economic growth is the main objective of monetary policy. Economic growth is crucial and the major concern of policy makers and government considering its influence on citizens' socio-economic well being, a nation's development and its global status amongst the nations. Economic growth is also essentially important for the pivot role it plays in alleviating poverty, reducing inequality, enhancing employment generation and improving standard of living. Economic growth reflects a country's productive capacity and efficient utilization of its scare resources. Gross domestic product (GDP) which could be in nominal or real term is commonly used as a measure of economic growth of a country.

In an effort to facilitate economic growth, the government and policy makers work to adopt and implement the right policies that ensure sustainability of the economy and promote growth. Monetary policy is one of the major macroeconomic policy tools rely upon to achieve this objective. As a result, monetary policy is instigated to achieve internal macroeconomic stability through effective control of inflation and proper management of interest rate movements with exchange rate regulation for external stability. As stressed by Aderemi, Caleb, Alaka & Efunbajo (2020), monetary policy is brought into effect to maintain internal and external stability in order to sustain economic growth and development. Interest rate, inflation rate, and exchange rate are growth-promoting macroeconomic variables, and they are the main emphasis of Nigeria's economic policy. Investment decision is affected by changes in interest rate, inflation and exchange rate which ultimately influence economic growth. When interest rate, inflation and exchange rate are within reasonable bounds, both domestic and foreign investments would drive growth. When economy is experiencing stagnant growth, interest rate is adjusted to encourage borrowing and spending thereby activating economic activities. A reduced cost of borrowing enhances economic growth by providing incentive for business investment and expansion. Also, lower borrowing cost boosts economic activities through consumers' enhanced purchasing ability. Thus, interest rate policy is an important tool employed by monetary authorities in managing the economy to achieve an ultimate target of economic growth. Interest rate policy could be relaxed when the economy is slow to stimulate spending and spur economic growth, and tightened when the economy is overheated with excess aggregate demand to control inflation. However, high interest rate policy should be used with caution otherwise it may retard economic growth by discouraging borrowing for investment when is beyond the convenient reach of businesses or may frustrate consumption spending when is too expensive for consumers to access credit.

In addition, effective inflation control will also facilitate the sustainability of a steady growth. As observed by Anagaw (2023) maintaining price stability with economic growth is one major macroeconomic objective of most developing countries. Economic instability and hardship could result from excessive inflation (Danladi, 2022). Persistent inflation continues to be a worrisome issue of macroeconomic concern in many developing economies (Adukpo, Bethel & Prah, 2026). Monetary authorities could have a better influence on inflation by regulating monetary instruments such as interest rate, reserve requirements and open market operation to manage

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money supply and control excessive spending in the economy. This entails hiking interest rate, raising reserve requirements for deposit money banks and open sales of government bonds. This could be employed to sustain a stable level of inflation within a target range or optimal level while encouraging economic activity to aid sustainable economic growth. A moderate inflation provides support for a stable macroeconomic environment for sustainable economic growth (Tarawalie& Kamara, 2022). Further, exchange rate management can induce economic growth by influencing trade, investment and inflation. In managing the value of currency, monetary authorities can improve export competitiveness, attract foreign investment and preserve price stability in order to create a more robust economy. Exchange rate management can enhance export, create trade surplus and boost economic growth. By reducing the anxiety associated with potential exchange rate fluctuations, a stable exchange rate can attract both domestic and foreign investments. The uncertainty resulting from unstable currency value might hamper investments and retard economic growth (Eniekezimene, Wodu & Anda-Owei, 2024). The impact of exchange rate on economic growth can either be favorable or unfavorable. A depreciating currency can boost exports and decrease imports, which will encourage domestic production and promote economic growth. Conversely, a stronger currency may hurt the economy by deterring exports and encouraging imports, which would hinder domestic production and impede economic growth. Numerous socioeconomic factors have had a negative impact on Nigeria's economy over the years, including poor standard of living brought on by the country's high cost of living, high unemployment rate, high rate of illiteracy, inadequate infrastructure development, inadequate healthcare facilities, heavy reliance on imports, fluctuations in exchange rate and many other issues. These indices measure the performance of an economy in relation to the effectiveness of macroeconomic policy tools in stimulating economic growth. Monetary policy is considered more effective in managing and stabilising internal and external macroeconomic variables to achieve the objective of economic growth. Economic growth in Nigeria has been hampered by several factors which include unsuccessful efforts by the central bank to manage inflation, interest rate and exchange rate. Nigeria has faced persistent inflation over the years eroding purchasing power and discouraging investment. Also, economy is beset by high interest rate resulting in high cost of borrowing for investment and consumption coupled with limited access to credit, retarding productivity and economic growth. Further, heavy reliance on importation has worsened balance of payment condition with exchange rate volatility. Economy major reliance on oil revenue and poor ability to diversify have made Nigeria vulnerable to fluctuations in global oil prices. In a bid to resolve these issues and put economy on the path of sustainable growth, series of polices and measures were adopted and implemented over the years.

In spite of various policy interventions, Nigeria economic issues still remain unresolved battling with slow rate of economic growth characterized with high poverty rate, economic hardship, high cost of living, gross inequality, low productivity and currency fluctuations. A good number of studies from the literature with diverse results have been conducted to determine either the effect of inflation rate on economic growth; interest rate on economic growth; exchange rate on economic growth or combinations of any two of the variables on economic growth in Nigeria in particular coupled with evidence from some other countries. Some of these studies include (Tran, 2018; Ismaila, 2018; Miftahu, 2019; Evans, 2019; Idris & Suleiman, 2019; Ribeiro *et al.,* 2020; Adaramola & Dada, 2020; Karahan, 2020; Olaniyan *et al.,* 2020; Matarr & Momodou, 2021; Onwubuariri *et al.* (2021); Mbuyi, *et al.,* 2022; Ahamed et al,.2022; Danladi, 2022; Tarawalie & Kamara, 2022; Azam & Khan, 2022; Najafi, *et al.,* 2023; Amor *et al.,* 2023; Mgbomene & Igben, 2023). From the literature reviewed, it was revealed that studies on combined effect of inflation rate, interest rate and exchange rate on economic growth in Nigeria are still scanty. In addition, the inability of the previous studies to arrive at a consensus on the results of their findings also supports the need for this study. Therefore, this study evaluates the effect of inflation, interest rate and exchange rate on economic growth in Nigeria from 1999 – 2023. The remaining parts of the study are organised as follows: Section 2 comes next to the introduction, and it reviews the literature. Section 3 discusses the methodology while section 4 presents results and discussions. Lastly, conclusion and recommendations are given in Section 5.

LITERATURE REVIEW

Theoretical Review

Hicks (1937) formulated IS-LM model to explain Keynesian theory that money for investment in the real sector (IS) may be supplied by monetary sector (LM) at a given interest rate. IS-LM model presented a framework to explain the relationship between the supply and demand for goods and services in real sector (goods market) and the supply and demand for money in monetary sector (money market). IS presents a link between interest rate and equilibrium in the goods market where savings equal investment while LM represents a link between interest rate and equilibrium in the money market where liquidity preference equals money supply. Interest rate is the route through which activities in money market affect behaviors in real sector that induce economic growth. This establishes a link between interest rate and economic growth. Meanwhile, the money supply activity of money market if in excess of demand may generate inflation in real sector. Keynesian theory however, maintains that steady inflation can enhance the growth of an economy in the short run by stimulating employment and aggregate demand while this may not hold in the long run. In the long run, persistent inflation may have a negative relationship with economic growth by

eroding purchasing power and discouraging investment. This view suggests an association between inflation and economic growth. Further work on Keynesian theory by Mundell-Fleming (1963) extended the theory to an open economy system with foreign transactions. It was argued that in an open economy, monetary policy will be more effective than fiscal policy in stabilizing exchange rate to manage aggregate demand and spurs economic growth. Mundell-Fleming (1963) argued that a proper management of exchange rate system is capable of promoting economic growth by preventing inflation, reduce fiscal deficit and achieve balance of payment equilibrium. This view also justifies a connection between exchange rate and economic growth. In order to ascertain the aforementioned theoretical linkages, empirical evidence was explored from the literature.

Empirical Review

Most studies conducted from literature provided evidence of mixed results. A study by Tran (2018) in Vietnam examined the impact of exchange rate and inflation on output growth. The study employed Vector Autoregressive (VAR) model to estimate annual time series data from 1998-2016. The regression results revealed that the lag between price and the GDP growth rate has an influence on the economy of Vietnam. Also, Ismaila (2018) in a study investigated the impact of exchange rate uncertainty and foreign direct investment on macroeconomic performance in Nigeria. The study employed error correction mechanism and adopted time series econometrics analysis to evaluate annual data from 1995 -2015. The study shows that in the long run exchange rate variables have more impact on economic growth and inflation in Nigeria. Miftahu (2019) examined the effect of interest rate on economic growth in Nigeria. The study used annual time series data from 1980 – 2017 and applied Vector Auto-regression (VAR) model and the Granger causality test to evaluate the model coefficients. The results revealed a negative relationship between interest rate and economic growth in Nigeria. Further, Granger causality test identified a bidirectional causal association between interest rate and economic growth. Another study by Evans (2019) examined the threshold relationship between interest rate, economic and investment in Nigeria. The study utilized yearly time series data from 2006-2017 and applied threshold estimation technique to the variables of the model. The results clearly identified two thresholds as 21.1% for interest rate- GDP growth and 22.6.% for interest rate- investment growth. The result implies that economic growth is stimulated by interest rate at a threshold below 21.1% while investment grows at a threshold below 22.6%. A study on inflation and economic growth in Nigeria by Idris & Suleiman (2019) examined the impact of inflation on economic growth in Nigeria from 1980 - 2017. By applying Vector Error Correction Mechanism (VECM to variables of the model, the results indicate that inflation has a long run negative and significant impact on economic growth over the study period in Nigeria. This implies that economic growth significantly declines through rising influence of inflation rate.

Further, in a study on the effect of exchange rate on the economies of developing countries, Ribeiro *et al.* (2020) evaluated the impact of real exchange rate on economic growth. The study used annual data from 1990 to 2010 and found that economies of developing nations were badly affected by the undervaluation of local currency. Adaramola & Dada (2020) investigated the impact of inflation on economic growth in Nigeria. The study applied autoregressive distributed lag estimation technique to annual time series data from 1980-2018. The variables of the model are real gross domestic product (GDP), inflation, interest rate, exchange rate, money supply, government consumption expenditure and degree of the economy`s openness. The results revealed that economic growth was hampered by inflation and real exchange rate in Nigeria within the study period. Also, a study by Karahan (2020) investigated exchange rate and economic growth nexus in Turkey. The study employed quarterly data from 2002- 2019 and applied Johanson Co-integration technique. The results established a negative association between exchange rate and economic growth. This indicates that economic growth declines with a rise in exchange rate. Thus, the Turkish authorities should implement an exchange rate policy targeted at managing inflation in order to promote economic growth in the country. Olaniyan *et al.* (2020) investigated the effect of interest rate on investment choice to promote economic growth in Nigeria from 1989 -2019. The variables of the model are economic growth proxy by gross domestic product, interest rate, exchange rate, external borrowing and inflation rate. Based on unit test result, the study applied auto-regressive distributed lag (ARDL) model to estimate the variables of the model. The results revealed that interest rate, exchange rate, external loan and economic growth have long-term relationship. In addition, no evidence was established to support the association between interest rate and investment choices in Nigeria.

Matarr & Momodou(2021) in a study conducted in Gambia from 1993 to 2017examined how economic development was impacted by interest rate.Vector error correction model (VECM) was applied to determine the nexus between the dependent variable, economic growth proxy by gross domestic product (GDP) and the independent variables, real effective exchange rate and real interest rate in both short and long run periods. Empirical analysis revealed no short term association between economic growth in Gambia and the interest rate within the study period. But long run correlation was established between the Gambian economic growth and variables of interest rate and real exchange rate as shown by the analysis. A study in Nigeria by Onwubuariri *et al.* (2021) investigated the effect of inflation on economic growth. The study applied autoregressive Distributed Lag (ARDL) model and error correction mechanism (ECM) to annual time

series data from 1980-2019. The findings show that economic growth is negatively affected by inflation rate. In the Democratic Republic of Congo (DRC), Mbuyi, *et al.,* (2022) examined the impact of Exchange Rate Volatility on Economic Growth using the vector auto-regression (VAR) model. The study used annual data from 1990-2020 making gross domestic product a function of its own changes, trade openness and the exchange rate. The results showed that domestic currency depreciation retards economic growth in the country within the study period. This implies that economic growth declines with higher exchange rate. Ahamed *et al.*.(2022) conducted a study to evaluate impact of interest rates on the economic growth in Bangladesh. The study analysed annual time series data from 1988-2019 to determine the response of economic growth to interest rate innovations. The results of the findings showed that economic growth is significantly affected by interest rate. Thus, interest rate has the tendency to determine the fortune of economic progress in the country.

A study by Danladi (2022) from 2000 - 2009 in Azerbaijan explored the effect of Inflation on economic growth. Inflation rate proxy by consumer price index, real gross fixed capital formation growth rate and the growth rate of real gross domestic product were the variables employed for the analysis. The threshold model estimate revealed a non-linear relationship between inflation and economic growth. Thus, 13 per cent was indicated as the threshold point of inflation for economic growth. The results also show that inflation rate above 13 percent threshold will have negative effect on economic growth while less than 13 percent will have positive effect on economic growth in Azerbaijan. Tarawalie& Kamara (2022) employed a non-linear regression model to investigate the relationship between inflation and economic growth in Sierra Leone. Using annual time-series data from 1980 -2020, the study applied ordinary least squares estimation techniques to ascertain inflation and economic growth nexus. The results show a linear connection between inflation and economic growth in the country. Specifically, the study revealed that 10.3 percent is the baseline inflation rate that will instigate a favourable impact on economic growth. Thus, inflation below 10.3 percent is desirable for economic growth in Sierra Leone in the study period. In the same manner, Azam & Khan (2022) evaluated the relationship between inflation and economic growth in 27 countries16 of which are developing while 11 are developed economies. The study used yearly data spanning 1975–2018 to ascertain the nexus between the study variables. The results of the findings revealed that a significant negative link exists between inflation and economic growth above the inflation benchmark. The results actually show inflation as having a larger negative effect on economic growth in developed countries than in developing economies.

Najafi *et al.* (2023) used annual time series data from Iran, Iraq and Turkey from 2005 – 2020 to examine the impact of inflation and exchange rate on economic growth measured with gross domestic product (GDP). Applying econometric techniques, the results of the findings show that inflation was significant and inversely affected economic growth while exchange rate has no significant impact on economic growth in the countries. A study by Amor *et al.* (2023) investigated the effect of real exchange rate misalignments on economic growth in Tunisia. The study used annual data and focuses on both overvaluation and undervaluation of local currency the country experienced between 2001 and 2016. The results of the findings show that the impact of overvaluation was negative on economic growth while undervaluation period was associated with no significant effect on economic growth in Tunisia. It was also established that real undervaluation promote economic growth up to a threshold of 10.02% deviation from equilibrium. Also, Mgbomene & Igben (2023) estimated the effect of interest rate and currency rate on economic growth in Nigeria from 1981–2021. The study variables are real gross domestic product (RGDP) as a proxy for economic growth and dependent variable while the prime lending rate, savings deposit rate, exchange rate and total investment are independent variables. The study used annual time series data and applied Error Correction Model (ECM) method. The pre-estimation results revealed that there were co-integration among the variables and were stationary at first difference. The estimated results show that prime lending rate and the exchange rate had slow effect on economic growth with that of exchange rate more pronounced. Further, total investment and savings deposit rate promote economic growth with more significant effect from total investment. Thus, in conclusion economic growth in Nigeria was negatively affected by prime lending rate and exchange rate during the study period.

MATERIALS AND METHODS

Theoretical Framework

The Keynesian theory, as articulated by Keynes (1936), Hicks (1937), and Mundell-Fleming (1963), advocated a theoretical view connecting inflation rate, interest rate, and exchange rate with economic growth, suggesting that these variables can impact a country's economic performance. Monetary authorities can influence these macroeconomic variables to manage a country's overall economy. Changes in inflation rate, interest rate and exchange rate can affect investment, employment, consumption, foreign trade transactions, balance of payment equilibrium position and overall output. For instance, economic theory suggests that inflation which is primarily driven by excess money supply affects economic growth by distorting price signals and creating uncertainty. Theory also views adjustment to interest rate as stimulating or slowing down the economy by encouraging or discouraging borrowing for investment and ultimately influencing the level of economic growth. Further, exchange rate fluctuations can affect businesses and investment decisions and, in turn, impact the economy.

Empirical Model

Based on the theoretical postulate as earlier stated, economic growth can be written as a function of macroeconomic variables as follows:

$$Y = f(macv) \quad (3.1)$$

Economic growth depends on macroeconomic variables, according to equation (3.1). Economic growth is stimulated with a monetary policy decision that induces changes in macroeconomic variables of inflation rate, interest rate and exchange rate. Equation (3.1) is changed to provide the following result in its proper form:

$$Y = \alpha + \beta macv + \mu_t \quad (3.2)$$

In equation (3.2), α stands for autonomous growth, macv stands for macroeconomic variables, β, coefficient that measures impact of macroeconomic variables on economic growth, μ is error term and t stands for time.

From the foregoing, the empirical model for the study is expressed in equation (3.3) as follows;

$$RGDP_t = f(INFR_t\ IR_t\ EXR_t) \quad (3.3)$$

Where RGDP is real gross domestic product as a proxy for economic growth, INFR is the inflation rate, IR is the interest rate, EXR is the exchange rate, and t represents the time series component, respectively.

Equation (3.3) is written in a panel analysis econometric form in equation (3.4) as follows;

$$RGDP_{,t} = a_0 + \beta_1\ INFR_t + \beta_2\ IR_t + \beta_3\ EXR_t + \mu_t \quad (3.4)$$

All notations are as previously defined.

Considering the log transformations of the equation, equation (3.4) becomes:

$$LogRGDP_t = a_0 + \beta_1\ LogINFR_t + \beta_2\ LogIR_t + \beta_3\ LogEXR_t + \mu_t \quad (3.5)$$

Data and Sources

In order to analyse the effect of inflation rate, interest rate and exchange rate on economic growth in Nigeria, the study applied Ordinary Least Square (OLS) technique. A multiple regression model with the independent variables inflation rate (INFR), interest rate (IR), and exchange rate (EXR) was used, with exchange rate (EXR) regressed on real gross domestic product (RGDP) as the dependent variable. The secondary annual time series data for Nigeria for the period 1999-2023 were obtained from the National Bureau of Statistics database and the World Development Indicators (WDI) of the World Bank database. RGDP is the explained variable and expressed as a measure of annual real gross domestic product. It is employed as a measure of economic growth in Nigeria. INFR as an explanatory variable is used to determine how changes in commodity prices affect economic growth in Nigeria. IR is an explanatory variable and used as a measure of the effect of cost of borrowing on economic growth in Nigeria. EXR is an explanatory variable and employed as a measure of official exchange value of local currency. The theoretical expectations for the model variables predict the slopes of inflation rate and interest rate to be negative while that of the exchange rate is to be positive:

$$\frac{\partial RGDP}{\partial INFR} < 0, \frac{\partial RGDP}{\partial IR} < 0, \frac{\partial RGDP}{\partial EXR} > 0$$

The study, at the first stage and second stage of the analysis conducted descriptive statistics and correlation matrix respectively. While a Fixed effect test was carried out at stage three of the analysis. The analysis at the fourth stage was on Random effect test. Finally, at the last stage to determine the preferred choice between the two previous tests, the study adopted Hausman test (Durbin-Wu-Hausman test).

RESULTS AND DISCUSSION

From Table 1, the mean value of real GDP is 22.01 with minimum and maximum values of 19.38 and 31.17 respectively. In a similar manner, the mean value of the inflation rate is 21.21 with minimum and maximum values of 16.64 and 30.00, respectively. In addition, the interest rate has a mean value of 9.43 with a minimum value of 0.79 and a maximum value of 33.65. Further, the exchange rate mean value is 14.09 with 4.64 as the minimum value and 35.46 as the maximum value. The values of standard deviation implied that the data series are a little further from their mean value. The result also reflects a low level of inflation volatility from its average value.

Table 1: Descriptive Statistics

Variable	Observation	Mean	Standard Deviation	Minimun	Maximum
LRGDP	100	22.01	2.40	19.38	31.17
LINFR	100	21.21	3.02	16.64	30.00
LIR	100	9.43	5.30	0.79	33.65
LEXR	100	14.09	3.02	4.64	35.46

Source: Author, 2025

Table 2: Correlation Matrix

Variable	LRGDP	LINFR	LIR	LEXR
LRGDP	1.00			
LINFR	-0.07	1.00		
LIR	-0.04	-0.25	1.00	
LEXR	-0.08	-0.02	0.15	1.00

Source: Author, 2025

From Table 2, the correlation matrix shows that there is negative correlation between the real GDP and inflation rate. Also as predicted interest rate has a negative correlation with the real GDP, similarly there is negative correlation between the real GDP and exchange rate. Further, as speculated by theory, inflation rate has a negative correlation with interest rate and has a negative correlation with exchange rate while exchange rate has a positive correlation with interest rate.

From Table 3, the fixed effect models' results indicate that inflation rate and interest rate are negative but significant at 1% and 5% respectively on economic growth as revealed by their coefficients. This suggests that a 1 percent rise in inflation rate will lead to 0.04 percentage decrease in economic growth while a 1 percent higher in interest rate will generate a 0.03 percentage decrease in economic growth. Also, the result reveals that exchange rate is negative but statistically significant at 1% on economic growth. This implies that a 1 percent rise in exchange rate will result to 0.02 percent fall in economic growth in Nigeria.

Table 3: Fixed Effect Model

Variable	Coefficient	Standard Error	t-statistics	p-value
LINFR	-0.04*	0.01	2.67	0.007
LIR	-0.03**	0.01	-1.84	0.031
LEXR	-0.02*	0.01	1.25	0.000
C	8.53*	0.56	13.22	0.016
R2	0.68			
F- statistics	301.57 (0.000)			

*Note: *, **, *** denote level of significance at 1%, 5%, 10% respectively*
Source: Author, 2025

Table 4: Random Effect Model

Variable	Coefficient	Standard Error	Z-statistics	p-value
LINFR	-0.40*	0.01	2.19	0.001
LIR	-0.13	0.01	-1.90	0.271
LEXR	-0.02**	0.01	1.33	0.0382
C	9.73*	1.22	5.72	0.014
R2	0.68			
Wald Chi2	986.59 (0.000)			

*Note: *, **, *** denote level of significance at 1%, 5%, 10% respectively*
Source: Author, 2025

From Table 4, the results on random effect model indicate that inflation rate is negative and statistically significant at 1% on economic growth. This implies that a 1% rise in the rate of inflation will bring about a 0.540 percentage decrease in economic growth. Interest rate is also negative and statistically insignificant on economic growth. This shows that a 1 percent increase in interest rate will lead to an insignificant 0.13 percentage fall in economic growth. Further, exchange rate has a negative coefficient but significant at 0.05 level. This statistically indicates that economic growth declines by 0.02 percent with a 1% rise in inflation rate in Nigeria.

Therefore, the need to choose a preferred model between fixed effect and random effect models requires the adoption of Hausman test as presented on Table 5. Meanwhile, the results of Hausman fixed-random effects model based on the chi-square from the Hausman test shows that random effect model is preferable.

Table 5: Hausman Fixed-Random Effects Model

		Coefficient		
	B	B	(b-B)	(Vb-VB)
	Fe	Re	Difference	SE
LINFR	-0.02	-0.01	-0.00	0.00
LIR	-0.03	-0.01	-0.00	0.00
LEXR	-0.02	-0.02	-0.00	0.00
Wald Chi^2	0.9899(0.1572)			

Source: Author, 2025

From empirical analysis of the effect of inflation rate, interest rate and exchange rate on economic growth in Nigeria from 1999- 2023, the result of the fixed effect model reveals that inflation rate, interest rate and exchange rate have negative and statistically significant effect on economic growth over the study period as indicated by the signs and magnitudes of their coefficients. Thus, a 1% rise in the rate of inflation will result in 0.04 percentage decrease in the rate of economic growth in Nigeria. Also, economic growth will decrease by 0.03 percentage with a 1% higher in interest rate. In addition, a 1% rise in exchange rate in Nigeria will bring about 0.02 percentage decline in economic growth. The results of fixed effect model confirmed some previous findings from the literature and are also in agreement with "a" priori expectation except for exchange rate. The finding on inflation rate is in agreement with the findings by Idris & Suleiman (2019) and that of Najafi *et al.* (2023) in studies that assessed the effects of inflation on economic growth. Their studies found that economic growth tends to decline significantly as inflation rises which denotes a negative and significant impact of inflation on economic growth. Also, the findings on interest rate confirm the findings by Miftahu (2019) examined the effect of interest rate on economic growth in Nigeria. The study established that interest rate has a negative and significant effect on economic growth in Nigeria. In addition, the result of exchange rate is in consonant with the result of a study by Ribeiro *et al.* (2020). The study investigated the effect of exchange rate on economic growth in developing countries. The result found that economies of developing nations were badly affected by undervaluation of local currency. This implies that hike in exchange rate or devaluation of local currency has a negative and significant effect on economic growth of developing countries over the periods.

The evaluation of the effect of inflation rate, interest rate and exchange rate from 1999-2023 through the random effect model further shows inflation rate as having a negative and significant effect on economic growth in Nigeria. As a result, 1% increase in inflation rate will lead to 0.040 percentage reduction in economic growth. Also, the result on interest rate reflects a negative but statistically insignificant effect on economic growth. Further, economic growth is negatively and significantly affected by exchange rate in Nigeria. Thus implies that 1% hike in interest rate will generate an insignificant 0.13 percentage decline in economic growth while 1% increase in exchange rate will decline economic growth by 0.02 percentage. The results of random effect model supported some of the studies previously conducted from the literature. The result on inflation rate upholds the theoretical expectation and is consistent with that of Onwubuariri *et al.* (2021) in a study that evaluated the effect of inflation on economic growth in Nigeria. The findings of the study show that inflation rate has negative and significant effect on economic growth. A study by Azam & Khan (2022) that examined the relationship between inflation rate and economic growth in some developed and developing countries also affirmed a significant negative association between inflation and economic growth in these countries. In the same manner, the finding on interest rate is in line with the theory and also confirms the findings by Mgbomene & Igben (2023). The study investigated the effect of interest rate proxy by prime lending rate alongside some other variables on economic growth in Nigeria and noted a negative and significant response of economic growth to a rise in interest rate. Further, the result of exchange rate deviates from "a" priori expectation but in agreement with the findings by Karahan (2020). The study investigated exchange rate and economic growth nexus in Turkey. The results established a negative association between exchange rate and economic growth. This indicates that economic growth declines with a rise in exchange rate. Mbuyi, *et al.* (2022) also carried out a study to confirm this result by examining the impact of exchange rate volatility on Economic Growth in the Democratic Republic of Congo (DRC). The result of the study indicates a retarded economic growth as exchange rate increases.

Based on Hausman analysis test results, the associated chi-square test supports random effect model as the preferred model for the evaluation. This hinges on the fact that the Wald chi-square value is not statistically significant. Hence, random effect model is preferred. Thus, the random effect model results state that economic growth declines significantly with higher rate of inflation but insignificantly reduces with a hike in interest rate while a higher exchange rate significantly decreases economic growth in Nigeria.

CONCLUSION

The study evaluated the impact of inflation rate, interest rate and exchange rate on economic growth in Nigeria spanning 1999-2023 for a period of 25 years. Fixed effect model and random effect model were applied for the analysis of annual panel data while Hausman test was conducted and interpreted to determine the preferred choice from the two models. Results from the fixed effect model revealed inflation rate, interest rate and exchange rate as having negative and significant influence on economic growth. Results of random effect model from the analysis also show negative and statistically significant impact of inflation rate on economic growth within the study period. Negative and statistically insignificant influence of interest rate on economic growth was also revealed by the parameter analysis of the variables. Further, the influence of exchange rate was also negative and statistically significant on economic growth in Nigeria. Further, the results indicate random effect model as the preferred model of the study judging from the Wald chi-square value on the chi-square test of the Hausman test. It is however noted from the results of the findings that two of the three macroeconomic variables employed for the study which are inflation rate and interest rate exhibit the expected theoretical relationship with economic growth except the exchange rate that deviated. The result

from the study probably revealed the reality in Nigerian economy by which production, trade and consumption decline as inflation rate persistently increases or with a hike in interest rate or with instability in local currency. Thus, reductions in investment, trade and consumption in turn have adverse and consequential effect on the country's economic growth and development. Nigeria's economy is characterized with high double digit inflation rate, high cost of borrowing, currency and price instability. The outcome of this study could probably explain the reason behind Nigeria's continuous slow economic growth and development over the years. Based on the findings of the study, the following recommendations are made: the monetary authority in Nigeria should make effort to achieve price stability through effective control of inflation to encourage consumption and saving for investment. Also, with respect to interest rate, government of Nigeria should encourage the central bank to implement discount rate policy of reducing bank rate to lower the cost of borrowing for businesses and households. This will in effect increase consumer spending and encourage borrowing for investment to stimulate the real GDP growth in Nigeria. Finally, to ameliorate the adverse effect of exchange rate on the economy, monetary authority in Nigeria should embark on the mission of local currency stability by enhancing foreign sector performance through improved export promotion and foreign exchange management.

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