

Impact of Inflation Rate and Exchange Rate Fluctuations on Economic Growth in a Developing Nation

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Abstract

This study examined the impact of inflation and exchange rate fluctuations on economic growth in developing nation for the period of 1986-2022 (37years). Data for the study was obtained from CBN Statistical Bulletin and CBN Annual Report. The inflation [proxied with Inflation Rate (INFLR), Consumer Price Index (CPI) and Producer Price Index (PPI)] with and exchange rate fluctuations [proxied with Exchange Rate (EXCHR), Exchange Rate Fluctuations (EXCHRf) and Trade Balance (TB)] intertwine to affect the economic growth [proxied with Real Gross Domestic Product (RGDP)] of Nigeria. Data was analyzed using the descriptive statistics and correlation matrix. In this work, the unit root test, ARDL Bound Co-integration test, and ARDL Co-integrating and Long form were utilised as via Econometric Views version 9.0. The findings revealed that INFLR has a p-value of 0.3324 on the short run and a p-value of 0.3766 on the long run, respectively. This suggests that both in the short and long terms, INFLR has no significant impact on RGDP in Nigeria; On the short- and long-term, respectively, p-values for CPI are 0.4763 and 0.4500. This suggests that CPI has no significant short- and long-term impact on RGDP in Nigeria; In terms of the short and long runs, PPI has p-values of 0.5634 and 0.5183, respectively. This suggests that both in the short and long terms, PPI has no significant impact on Nigeria's RGDP; On the short- and long-term, respectively, EXCHR had p-values of 0.9136 and 0.9148. This suggests that EXCHR's impact on Nigeria's RGDP, both in the short and long terms, is not significant; on the short- and long-term, EXCHRf exhibits p-values of 0.8346 and 0.8311, respectively. This suggests that EXCHRf has no significant impact on RGDP in Nigeria over the long and short terms and in both the short and long runs, TB exhibits p-values of 0.6805 and 0.6620. This suggests that TB has no significant short and long-term impact on Nigeria's RGDP. Hence, the research came to the conclusion that an inflation and exchange rate fluctuation has an insignificant impact on economic growth in developing nation like Nigerian. The recommended that high inflation can negatively affect real GDP by eroding purchasing power and distorting investment decisions, policymakers in Nigeria should focus on implementing effective monetary policies to keep inflation under control.

Keywords: *Inflation, Exchange Rate, Fluctuations. Economic, Growth and Developing Nation*

Introduction

Global governments are always attempting to solve economic concerns. Job prospects, inflation, and currency value are among these concerns. The global financial crisis has impacted exchange rate and economic policy management (Ugomma & Chijioke, 2024). Exchange rates are undisputedly important and constant (Miftahu & Shuyur, 2023). Inflation and exchange rates indicate a country's currency's competitiveness. Eroğlu and Olayiwola (2023) claim that the optimal currency rate strategy for emerging nations is still debated; this subject is one of Nigeria's most discussed due to its ongoing developments (Ewubare & Ushang, 2022). Inflation and currency rate volatility from internal and external shocks dominate. Inflation and currency rates may affect economic growth, say Cletus and Onyeonu (2023). Although inflation growth, causes, and characteristics vary by country, all economies experience it. Inflation reduces a country's purchasing power (McBride, 2019) and stimulates spending and capital investment over savings (Ugwulali, Adejuwon, Ojomolade & Ogwulali, 2021). For developed nations, inflation should be below 2%. Inflation degrades living standards, boosts borrowing expenses, and rises economic costs (Inim, Samuel & Abner, 2020). According to Mohseni and Jouzaryan (2018), Madurapperuma (2018), and Boel (2018), inflation may make it hard for local industries to maintain competitive prices, threatening export sectors. Unchecked, Nigeria's hyperinflation might reach 100%.

Currency market instability hurts Nigeria's economy (Kelikume & Nwani, 2019). Exchange rate fluctuations, which damage poor nations like Nigeria, are the most studied topic in international finance literature. Ajao and Igbokoyi (2018) think exchange rates indicate economic health. High exchange rates reflect economic strength. An unstable currency indicates a weak economy. Governments, especially in developing economies, have implemented many currency restrictions to maintain a stable exchange rate. Large exchange rate movements produced instability and uncertainty in these states (Godfrey & Agwu, 2019). Modern economic policy focuses on price stability in products and services at an inflation rate that does not impact the economy, businesses, or financial markets (McBride, 2019). Anfofum, Afang, and Moses (2018) claim that 2–6% inflation boosts wages, consumption, investment, innovation, and output. Double-digit inflation lowers consumer purchasing power and economic growth. Since the 1970s, everyone has worried about inflation's devastating effects on industrialized and rising nations, especially Nigeria. According to Inim, Samuel, and Abner (2020), all economists agree that inflation is a lasting price increase. Okoye, Olokoyo, Ezeji, Okoh, and Evbuomwan (2019) define inflation as long-term price increases. Definition, "general, continuous and persistent," describes inflation. High inflation slows global progress. Exchange rate fluctuations produce unexpected economic price adjustments (Kaltenbrunner & Paineira, 2018). Long-term exchange rate fluctuations and benchmark rate variances are mentioned. Exchange rate volatility is a major financial risk. Extreme currency rate changes hinder foreign trade and investments (Ajao & Igbokoyi, 2018). The 1973 Bretton Woods collapse allowed nations to freely fluctuate their currencies. Nationals with variable exchange rates expect volatility. Oaikhenan and Aigheyisi (2019) define exchange rate volatility as big swings around the currency rate's balance value or short swings around its long-term trend.

In Nigeria and other emerging nations, inflation and currency rate fluctuations impair economic growth (Ugomma & Chijioke, 2024). These two macroeconomic drivers affect investment, trade, employment, and productivity, producing growth possibilities and risks (Ogunjo & Oloyede, 2018). To encourage long-term economic growth and stability, policymakers, economists, and investors must understand inflation, currency fluctuations, and GDP (Adamu & Iorpev, 2020). An economy's long-term price increase is called "inflation". Economic growth is positively and negatively affected by inflation (Cletus & Onyeonu, 2023). High and unpredictable inflation affects consumers' purchasing power, savings, and economic decision-making, while low to moderate inflation supports investment and expenditure (World Bank, 2021). Nigeria's economy has struggled with inflation for years. Due to lower consumer purchasing power, investment, and manufacturing expenses, high inflation slows economic growth. Inflation disproportionately impacts vulnerable people and fixed incomes, which may change income distribution (Ugomma & Chijioke, 2024). In the mid-1980s, SAP boosted Nigeria's currency rate. SAP valued a stable Naira. Following that, the naira fluctuated against other currencies, particularly the dollar. Diversity is limitless and varies weekly, daily, and often hourly. Extreme volatility makes the naira unpredictable. Politicians, professionals, and domestic and foreign investors have grown concerned about currency rate instability (Ajao, 2018).

The 1986 Economic Recovery Program (ERP) contained the controversial Structural Adjustment Programme, which reformed Nigeria's financial sector. In the late 1980s, fixed exchange rates were replaced with free-floating (Oke & Adetan, 2019). More flexible exchange rates were thought to help the country prosper and prevent boom-and-bust. Exchange rate channels should support GDP through stable consumer prices, increasing volumes, investments, and favorable trade terms. According to Yusuf et al. (2019), Nigerians may have overvalued the Naira before the structural adjustment program (SAP), as it was worth ₦1 to 0.90 cents in 1981. The Nigerian economy depends more on foreign inputs than non-oil exports. Imports surpass exports, depreciating an economy's currency (Dung & Okereke, 2022). Oborogi (2023) predicts a weak currency for that nation. The Nigerian Naira is exchanged for dollars at \$1 to ₦498.00 and pounds-sterling at £1 to ₦581.29. From 2008 to 2009, the Naira climbed from 120/\$ to over 180/\$, showing how the global financial crisis affected the currency rate. The worldwide crude oil price reduction has hurt Nigeria's overseas income and revenue. Advanced economies' increasing focus on wind, bio-energy, and solar energy has reduced crude oil consumption and prices from \$110 per barrel to below \$50 per barrel between mid-2018 and early 2019 to \$38.77 per barrel in the fourth quarter of 2020. This makes it harder for Nigeria to support industries that raise living standards, GDP per capita, create jobs, and boost the economy (Dung & Okereke, 2022).

Exchange rates fluctuate when one currency's value changes on the forex market (Akpan & Offiong, 2019). Currency rate swings might hurt Nigeria's economy, which relies on imports and exports (Nwankwo, 2023). As the local currency depreciates, imports and raw commodities cost more, rising inflation and production costs. Exchange rates affect export competitiveness, trade balance, and economic performance. Nigeria's volatile currency may damage exports, international investment, and market confidence (Miftahu & Shuyur, 2023). Rapid inflation has many negative impacts, thus no economy wants this. In this case, inflation triggers matter. Many countries have inflation, and experts have different theories. Dimitimi, Keji, and Emma-Ebere (2018) focus on economic differences when identifying inflation's origins. Many Nigerians believe

macroeconomic factors including the dollar's value, debt, oil prices, government spending, and population affect inflation (Agyire-Tettey, 2018; Weiseke, 2019). Inflation and commodity price surges worry Nigeria's economic officials (Okotori, 2018). The above is managed by macroeconomic policy—monetary and fiscal. With structural reforms, the IMF builds a powerful macroeconomic stabilisation trifecta (Okotori, 2018).

According to Ojomolade (2018), inflation, corruption, and unemployment have slowed Nigeria's growth despite its natural and people resources. Double-digit inflation improves income and consumption but hinders investment and productivity. Borrowers' and lenders' earnings and losses are unclear, lowering financial asset returns (Okotori, 2018; Oni, 2018). Budgetary imbalances raise government budgets, generating macroeconomic instability because high inflation reduces growth and hurts the poor (Oni, 2018). A currency devaluation raised import prices, lowering agricultural productivity. Nigeria's 1995 inflation was unpredictable due to financial institutions' increased lending to individuals and businesses, disrupting consumption, investment, and output (Ditimi, Keji & Emma-Ebere, 2018). Dollar exchange rate, wide money, national debt, oil prices, government spending, population, and other factors might cause inflation (UGwulali, et al., 2021). Therefore, this study will evaluate how inflation and currency rate variations effect Nigerian GDP growth. Nigerians' welfare and cost of living are affected by inflation. Cost increases make pricing unpleasant and many businesses idle or less productive, harming all sectors of the economy. Nigeria must identify all important inflation factors before managing it. Pre-SAP (fixed exchange rate) and post-SAP (flexible exchange rate) Nigeria has exchange rate volatility and related difficulties. But sharp foreign exchange dealer and end user activities marred the period. Due to these difficulties, SAP adopted a more flexible exchange rate system in 1986. Nigeria has faced import dependency, political instability, inflation, capital flight, and a lack of industry backward connections since 1986. Because inflation and currency rate changes create uncertainty, trade flows may suffer. Many studies have explored how naira exchange rate variations effect foreign trade in Nigeria, but none have examined how inflation and currency rate volatility affect Nigeria and beyond. In developing nations like Nigeria, inflation and exchange rate fluctuation impede economic growth. Both impact consumption, investment, economic performance, and living standards. To build sustainable development strategies in Nigeria, policymakers, analysts, and stakeholders must understand how inflation and currency rate fluctuations effect economic growth. Inflation diminishes consumers' purchasing power and makes buying products and services difficult. Due to uncertainty, inflation can limit consumer spending, firm investment, and economic activity. Second, exchange rates affect trade, foreign investment, and domestic industrial competitiveness. Depreciation or appreciation of currencies hurts several economic sectors. Thirdly, inflation and exchange rates may interact. Nigeria's inflation and exchange rate fluctuations hinder economic growth and development. Finally, knowing how inflation and currency rates affect Nigerian economic growth is essential for good monetary and fiscal policies. With Nigeria's inflation and currency rate oscillations, it's unclear what policies may be done to limit their negative effects on economic growth. Inflation and currency rate fluctuations influence economic growth in developing nations, particularly Nigeria. Nigeria's specific difficulties and opportunities are considered in this research of how inflation, currency rate changes, and trade balance effect economic growth [proxied by Real Gross Domestic Product (RGDP)].

Review of Related Literature

Conceptual Review

Concept of Inflation

Inflation is misunderstood despite its frequent use in economic debates. Most economists describe inflation as continuing price increases. Most definitions of inflation mean rising prices. The implicit price deflator for gross national product (GNP) continues to rise. Many call inflation "too much money is chasing fewer goods". Chude & Chude (2018) say inflation lowers currency value. Price inflation is a key economic indicator. Consumers, corporations, and policymakers suffer, hurting the economy. To make smart economic judgments and implement good monetary policies, one must understand inflation. Recent research shows inflation affects several economic areas. In 2021, the IMF determined that continuous inflation lowers consumers' purchasing power and real income and living standards. Due to higher manufacturing costs and lower profit margins, inflation may impede investment and economic growth. Inflationary tendencies may also undermine policymakers' price stability and economic growth efforts. Central banks stabilize macroeconomics and manage inflation with interest rate fluctuations. Authorities struggle to control inflation and growth in today's globalized economy. Complex inflationary tendencies must be grasped. Policymakers and others can predict and manage inflation to maintain economic stability and growth by researching inflation patterns and research.

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Concept of Exchange Rate

The exchange rate in Nigeria is the amount of naira needed to buy one unit of another country's currency (Campbell, 2018). In the age of trade liberalisation, a right policy mix is essential since exchange rate fluctuations affect the economy. Exchange rate volatility affects macroeconomic variables like outputs, imports, export prices, interest rates, and inflation, affecting economic performance. A good exchange rate and policy are needed to boost economic performance, according to Chong and Tan (2018). No currency rate is completely determined by market forces or a pure float. Alternatively, the managed float system allows monetary authorities to interfere in the foreign exchange market for strategic purposes (Mordi, 2018). Nigeria's central bank has

managed the exchange rate at various times. Multiple naira depreciations followed SAP implementation. A realistic exchange rate would improve macroeconomic performance and broaden the economy's productive base. SAP's 1986 adoption changed the country's exchange rate from pegged to flexible. Despite the Nigerian government's efforts to stabilise the currency rate, the naira has lost value before and after the 1994 planned deregulation, when it was valued N21.886 to the US dollar. Due to the 2008 global financial crisis, the naira ended 2009 at N150.01 (Aliyu, 2018). BOP has deteriorated because to these effects.

Theoretical Review

Structuralist Theory of Inflation

The structural theory of inflation was first proposed by Myrdal (1968) and Streeten (1972) (Canavese, 1982, referenced in Ugwulali, et al., 2021). It explains inflation in least developed countries (LDCs) using structural factors. Ugwulali et al. (2021) cite Streeten and Myrdal (Canavese, 1982) as opposing the standard aggregative approach to LDCs. Traditional aggregative analysis assumes the economy has integrated and balanced structures with smooth and quick production, consumption, and market-responsive backward and forward linkages. Discussing aggregate supply and demand makes sense. However, most LDCs have unstable economies, agrarian backwardness, poor institutions, underutilisation of natural resources, recurring wars, etc. Thus, LDC aggregative analysis is difficult. Structuralists say various gaps in LDCs reflect their structural response to development. Therefore, these activities may be related to inflation. Literature mentions the resource gap, food bottleneck, foreign exchange bottleneck, and infrastructure bottleneck. They argue that to fully understand inflation in low- and middle-income countries, one must identify the factors that cause different types of bottlenecks to form during normal development, examine how these bottlenecks raise prices, and consider how these price increases affect the entire economy. Nigeria is one of the least developed nations, therefore structuralist theory and advice apply.

The Portfolio Balance Approach

Exchange rates depend on the economy's financial equilibrium, according to Portfolio Balance. Financial equilibrium occurs when all financial asset markets are in equilibrium or when the desired and actual amounts of each asset are held. Domestic money, or the monetary base, domestic bonds, and foreign bonds are important in this context. This financial equilibrium has three equilibrium prices: the asset price, the national interest rate, and the exchange rate (Rogoff, 1996 referenced in Chude, 2018). Portfolio swaps between local and international assets increase foreign exchange demand and the exchange rate. Ojo (2018) noted that the method's computations neglect trading principles, which may explain the exchange rate's inexplicable oscillations.

Empirical Review

In 1981–2022, Ugomma and Chijioke (2024) examined how inflation and currency rate affected GDP. Central Bank of Nigeria Statistical Bulletin data was used for this investigation. GDP, inflation, and currency rates were correlated ($p = 0.005$) using a multiple linear regression model. A study using the Ordinary Least Square (OLS) method found that inflation negatively impacts Nigeria's GDP, whereas the exchange rate is statistically significant ($p\text{-value} < 0.05$) over the study

period. In this study, inflation and exchange rates explain 92% of GDP variance across the research period with an R2 value of 92.2%. The exchange rate and price level grew, which hurts economic growth, boosting Nigeria's GDP during the study period.

For 1990–2022, Cletus and Onyeonu (2023) examined how exchange rate fluctuations affected the country's inflation-growth nexus. Based on the bond test, the short-run ARDL model tested both assumptions. The study found inflation and currency volatility slow economic growth. Exchange rate volatility worsens a country's inflationary growth association. The coefficient shows that job growth depends favourably on the real exchange rate. Nigeria's employment growth rate would increase by 4.77% for every 1% exchange rate hike, assuming all other variables remain constant. According to the menu cost theory of pricing, higher inflation speeds up exchange rate pass-through. Nigeria's central bank should take the necessary steps, supported by political will, to minimise the negative effects of currency imbalances on economic growth to fulfil their monetary policy obligations.

Nwankwo (2023) examined Nigeria's economy's currency movements from 1986 to 2021 using an error correction model. The study examined how interest rate volatility, monetary policy instability, and inflation instability affect the Nigerian economy using annual time series data. The independent variables in this study are inflation, interest, and monetary policy rates, while the dependent variable is GDP. To evaluate the relationship between these parameters and the Nigerian economy, we used the Phillips-Perron unit root test, Johansen test for co-integration, and Error Correction Model. Results: Cointegration test confirms long-term association between Nigerian economy and Exchange Rate instability. Exchange rate instability does not significantly affect Nigeria's GDP throughout the selected time period. Conclusion: Results indicate that depreciating the national currency does not increase exchange rate stability or GDP position.

According to Miftahu and Shuyur (2023), naira fluctuations affect Nigerian GDP growth. This study utilises secondary data from the Central Bank of Nigeria's Statistical Bulletin, which covers many areas. From 1986, when the monetary authority switched to flexible exchange rates, to 2019. Correlation and regression were done using ordinary least square (OLS). The rate of exchange has a positive influence on emerging nations, although it is not statistically significant ($\hat{\alpha}=0.014$, $t = 1.783$, Pns), consistent with past findings. Inflation and interest rates also hurt economic growth, although not statistically. To maintain a trade surplus, the report advised the government to promote exports. Nigeria should foster trade, security, fiscal and monetary policy, and infrastructure to attract foreign investors.

By analysing the exchange rate's pros and cons, Eroğlu and Olayiwola (2023) assessed its impact on Nigeria's economic growth. Approach: This non-linear ARDL model examined how the exchange rate affects economic growth. Asymmetric effects testing measured naira value fluctuations. At least temporarily, a weaker Naira compared to the US dollar slows economic growth, while a stronger currency boosts it. They have the opposite long-term effect. Moreover, the asymmetric effects test shows that naira appreciation and depreciation affect economic growth differently. These data imply Nigeria's exchange rate and GDP growth are nonlinear. The

knowledge hoard has minimal impact on Nigeria's economic growth, too. Nigeria's low school enrolment and budget make this expected. According to this report, Nigeria's capital stock is underutilised, which may be slowing economic growth.

Research Methodology

This study used ex-post facto and quasi-experimental designs. The ex-post facto research design examines the impact of inflation and exchange rate fluctuations on economic growth in developing nations like Nigeria after the event or fact has occurred, while the quasi experimental design examines the causal effect. Verifiable variables mean the study cannot manipulate the variable of interest. This study used secondary sources (time series data) for 1986–2022, mainly World Development Indicators, CBN Statistical Bulletin, and CBN Annual Report, to achieve its research goals. Quality and relevancy are more essential than data source. These credible and accurate data and information sources will be used for the investigation.

This study utilises Econometric Views 9.0. This study performed unit root, Auto-regressive Distributed Lag (ARDL) Bound Co-integration, and ARDL Co-integrating and Long form tests using the estimate tool. The unit root test tests whether data series are stable (i.e., if their mean and variance are time invariant and their auto-covariance depends on the time lag between variables), while the ARDL bound cointegration test models both I(0) and I(1) variables. If the ARDL bound cointegration test shows no cointegration between study variables, the next step is to test for ARDL Co-integrating and long run form. The ARDL Co-integrating examined if cointegrated variables were affected by long-run equilibrium deviation. The model was also checked for series robustness (diagnostic) vis-à-vis descriptive statistical and trend analysis, correlation analysis, and Variance Inflation factor before running the analysis. This model was tailored to examine factors. To standardise the data set, natural logarithm was applied to economic growth (RGDP), inflation (INFLR), Consumer Price Index (CPI), and Producer Price Index (PPI), and exchange rate fluctuations (EXCHR, EXCHRF, and TB). The ARDL was specified as:

$$\begin{aligned} \Delta RGDP = & \partial_0 + \partial_1 RGDP + \partial_2 INFLR_{t-1} + \partial_3 CPI_{t-1} + \partial_4 PPI_{t-1} + \partial_5 EXCHR_{t-1} \\ & + \partial_6 EXCHRF_{t-1} + \partial_6 TB_{t-1} + \sum_{i=1}^k \gamma_1 i \Delta RGDP_{t-1} + \sum_{i=1}^k \gamma_2 i \Delta INFLR_{t-1} \\ & + \sum_{i=1}^k \gamma_3 i \Delta CPI_{t-1} + \sum_{i=1}^k \gamma_4 i \Delta PPI_{t-1} + \sum_{i=1}^k \gamma_5 i \Delta EXCHR_{t-1} \\ & + \sum_{i=1}^k \gamma_6 i \Delta EXCHRF_{t-1} + \sum_{i=1}^k \gamma_7 i \Delta TB_{t-1} + \varepsilon_t \text{ -----} -1 \end{aligned}$$

K = lag length for the Unrestricted Error-Correction Model (UECM)

Δ = first differencing operator

ε = white noise or disturbance error term

The co-integrating long-run relationship will be estimated using the specification below:

$$\Delta RGDP = \partial_0 + \partial_1 RGDP_{t-1} + \partial_2 INFLR_{t-1} + \partial_3 CPI_{t-1} + \partial_4 PPI_{t-1} + \partial_5 EXCHR_{t-1} + \partial_6 EXCHRF_{t-1} + \partial_7 TB_{t-1} + \varepsilon_t \dots \dots \dots 2$$

The short-run dynamic model is specify thus:

$$\Delta RGDP = \sum_{i=1}^k \gamma_1 i \Delta RGDP_{t-1} + \sum_{i=1}^k \gamma_2 i \Delta INFLR_{t-1} + \sum_{i=1}^k \gamma_3 i \Delta CPI_{t-1} + \sum_{i=1}^k \gamma_4 i \Delta PPI_{t-1} + \sum_{i=1}^k \gamma_5 i \Delta EXCHR_{t-1} + \sum_{i=1}^k \gamma_6 i \Delta EXCHRF_{t-1} + \sum_{i=1}^k \gamma_7 i \Delta TB_{t-1} + \varepsilon_{ct} \dots \dots \dots 3$$

where;
 ε_{ct-1} = the error correction term lagged for one period
 γ = the coefficient for measuring speed of adjustment in equation (5%)

RGDP = Real Gross Domestic Product,
 INFLR = Inflation Rate,
 CPI = Consumer Price Index,
 PPI = Producer Price Index,
 EXCHR = Exchange Rate,
 EXCHRF = Exchange Rate Fluctuations,
 TB = Trade Balance

Results and Discussion

Data for the study were analyzed using descriptive statistics, unit root test, trend analysis (to check the behaviour of study variables), correlation analysis (to check the collinearity of study variables), Variance INFL factor (to check for the severity of collinearity of the regressors) and ARDL cointegration test. They are therefore presented in the following sub-sections:

Table 4.2: Summary of Descriptive Statistics

	LOGRGDP	LOGINFLR	LOGCPI	LOGPPI	LOGEXCHR	LOGEXCHRF	LOGTB
Mean	4.078112	1.144055	1.169981	1.323644	1.822711	0.773373	5.718772
Median	4.258255	1.136721	1.110590	1.352247	2.099795	0.676934	5.982588
Maximum	5.276822	1.885361	1.862131	1.400192	2.636157	1.850078	6.765116
Minimum	2.296935	-0.698970	0.732394	1.168736	0.305475	-0.537523	3.467904
Std. Dev.	0.932844	0.427299	0.299357	0.063066	0.633775	0.714368	0.989999
Observations	37	37	37	37	37	27	31

Source: Econometric Views Version 9.0 Output (2024)

Given the huge variances between the series' maximum and minimum values, Table 4.2 shows significant variable variations. The descriptive statistics showed that the study variables covered 37 years (1986–2022). First, RGDP reported an average and SD value of 4.0781 and 0.9328, indicating rapid growth throughout the years since the SD value is less than the mean value. RGDP ranged from 2.2969 to 5.2768 from 1981 to 2021. INFLR reported an average and SD values of 1.1441 and 0.4273, respectively, indicating that INFLR has grown significantly over the years. Since the SD value is less than the mean value, it shows that the Nigerian government has implemented numerous INFLR tactics. INFLR ranged from -0.6989 to 1.8854 from 1986 to 2022.

Further, Nigeria's CPI averaged 1.1670 and SD was 0.7324, indicating significant development over time. SD is lower than mean, therefore this is obvious. CPI ranged from -0.7324 to 1.8621 during the research. PPI had an average and SD of 1.3236 and 0.0631, indicating a large deviation from the mean. PPI ranged from 1.1687 to 1.4002 during the research. This shows that the PPI administrator controls PPI in Nigeria, even when it rises since the mean is bigger than SD. Additionally, EXCHR reported an average and SD value of 1.8227 and 0.6338, indicating significant growth over time since the SD value is lower than the mean value. It implies that the Naira has depreciated against the US Dollar over time. EXCHR ranged from 0.3055 to 2.6362 during the research. Additionally, EXCHRF has an average and SD value of 0.7734 and 0.7144, indicating that SD is lower than the mean value and that EXCHRF has been rising with time. EXCHRF ranged from -0.5375 to 1.8501 during the research. Finally, TB had an average and SD value of 5.7188 and 3.4679, indicating that it has grown significantly over time as the SD value is less than the mean value. This means the Nigerian economy has supported international trade this year, strengthening its trade balance. Minimum and maximum TB values are 3.4679 and 6.7651.

Table 4.3: Correlation Matrix For the Independent and Dependent Variables

	LOGRGDP	LOGINFLR	LOGCPI	LOGPPI	LOGEXCHR	LOGEXCHRF	LOGTB
LOGRGDP	1.000000						
LOGINFLR	-0.140678	1.000000					
LOGCPI	-0.233166	0.675753	1.000000				
LOGPPI	0.674672	-0.187755	-0.229696	1.000000			
LOGEXCHR	0.662581	-0.194245	-0.201702	0.993047	1.000000		
LOGEXCHRF	0.249959	-0.098534	-0.149185	0.333888	0.305190	1.000000	
LOGTB	0.669189	-0.167481	-0.243199	0.970330	0.953358	0.244033	1.000000

Source: Econometric Views Version 9.0 Output (2024)

Table 4.3 shows that PPI, EXCHR, EXCHRF, and TB correlated positively with Nigerian RGDP, while INFLR and CPI correlated negatively. PPI's coefficient of 0.6747 indicates a substantial, positive correlation between PPI and RGDP in Nigeria. Meanwhile, the remaining study variables correlated less. In general, multi-collinearity is not expected because the correlation coefficients of INFLR, CPI, PPI, EXCHR, EXCHRF, and TB to RGDP are below 0.7. A subsequent test will determine this condition.

Table 4.4: Multi-collinearity Test

Variables	Variance INFL Factor	Tolerance Value
LOGRGDP(-1)	0.006260	3.685934
LOGINFLR	0.000534	2.728825
LOGCPI	0.002983	4.146933
LOGPPI	0.005528	1.971845
LOGEXCHR	0.003334	1.367222
LOGEXCHRF	0.000229	1.523977
LOGTB	0.001520	3.255437

Source: Econometric Views Version 9.0 Output (2024)

From the above Table 4.4, the tolerance level of variance in the predictor variables PPI, EXCHR, EXCHRF and TB is not predicted by other predictors' variable. This is because their tolerance values are higher than 0.10 meanwhile the Variance INFL factor are less than 10. This shows the absence of multi-collinearity problem.

Table 4.5: Data Validity Test

Table 4.5a: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.936064	Prob. F(2,8)	0.4312
Obs*R-squared	3.603116	Prob. Chi-Square(2)	0.1650

Source: E-VIEW, 9.0 Outputs, 2024.

To check for serial correlation, variable residuals were determined before estimating models. A serial correlation LM test was used. The serial correlation LM test in Table 4.5a shows that the models have no serial correlation because the f-statistics p-values are negligible at 5%.

Table 4.5b:Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.710615	Prob. F(8,10)	0.6793
Obs*R-squared	6.886457	Prob. Chi-Square(8)	0.5489
Scaled explained SS	1.264869	Prob. Chi-Square(8)	0.9960

Source: E-VIEW, 9.0 Outputs, 2024.

Variables with different variability from predictor variables are heteroskedastic. The Breusch-Pagan-Godfrey heteroskedasticity test ensured model estimation homoscedasticity. Since the f-statistics p-values are insignificant at 5%, the models have no heteroskedasticity issues. The chi-square P-value was 0.8076 in the table above. Since it is not significant at 5%, the study does not have heteroskedasticity. The null hypothesis that residuals have no constant variance and zero mean is rejected. So, the model is homoskedastic (equal variance). The model is reliable and predictive.

Table 4.5c: Ramsey RESET Test

Equation: UNTITLED

Specification: LOGRGDP LOGRGDP(-1) LOGINFLR

LOGCPI LOGPPI LOGEXCHR LOGEXCHRF LOGTB C

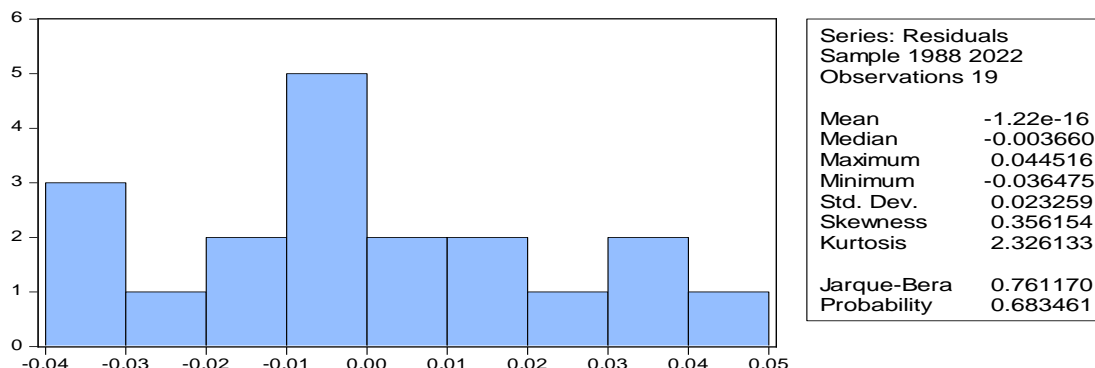
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.827185	9	0.4295
F-statistic	0.684235	(1, 9)	0.4295

Source: E-VIEW, 9.0 Outputs, 2024

Since three parameters have probability values greater than 0.05, the model is homoskedastic. Ramsey test results show our model is appropriately described and stable for regression analysis.

Table 4.5d: Normality Histogram Test



Source: E-VIEW 9.0 Output, 2024.

The residual normality test assessed model residual distribution normality. Remainders that are not regularly distributed indicate significant outliers in the data, which impacts standard errors and coefficient significance. As the histogram assumes a bell-shape and the J-B statistic probability value is 0.3728, which is greater than 0.05 (5%), the null hypothesis that the residuals are not normally distributed are rejected.

Table 4.6: Summary of ADF Test

ADF test at Levels				
Parameter	ADF test statistic	Test critical value @ 5%	Prob.*	Decision
RGDP	-4.217159	-2.945842	0.0021	Stationary
INFLR	-4.647703	-2.945842	0.0021	Stationary
CPI	-3.896870	-2.948404	0.0051	Stationary
PPI	-6.898260	-2.945842	0.0000	Stationary
EXCHR	-2.652274	-2.945842	0.0923	Non-stationary
EXCHRF	-4.256118	-2.945842	0.0019	Stationary
TB	-1.446788	-3.020686	0.5389	Non-stationary
ADF test at 1 st Difference				
RGDP	-3.189016	-2.948404	0.0292	Stationary
INFLR	-8.739661	-2.948404	0.0000	Stationary
CPI	-5.347814	-2.948404	0.0001	Stationary
PPI	-3.215034	-2.954021	0.0280	Stationary
EXCHR	-6.015223	-2.948404	0.0000	Stationary
EXCHRF	-7.128248	-2.951125	0.0000	Stationary
TB	-3.189016	-2.948404	0.0292	Stationary

Source: Econometric Views Version 9.0 (2024)

The table above displays the study series' order of integration (stationarity). ADF tests showed that all series except EXCHR and TB were stationary at levels. After further testing, INFLR, CPI, PPI, EXCHR, EXCHRF, TB, and RGDP reached stationarity at first difference. Thus, all series were stationary at level and first differencing. We should explore the long-term relationship between INFLR, CPI, PPI, EXCHR, EXCHRF, TB, and RGDP in Nigeria since our series were stable at levels (1(0) and first differencing (1(1)). The table above displays the study series' order of

integration (stationarity). ADF tests showed that all series except EXCHR and TB were stationary at levels. After further testing, INFLR, CPI, PPI, EXCHR, EXCHRF, TB, and RGDP reached stationarity at first difference. Thus, all series were stationary at level and first differencing. We should explore the long-term relationship between INFLR, CPI, PPI, EXCHR, EXCHRF, TB, and RGDP in Nigeria since our series were stable at levels (1(0) and first differencing (1(1)

Table 4.7: ARDL Bounds Test

Date: 05/21/24 Time: 19:13

Sample: 1988 2022

Included observations: 19

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	2.127464	6

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source: Econometric Views Version 9.0 Output (2024)

From Table 4.7, the F-statistic 2.1275 above the 5% critical values at I(0) and I(1) boundaries, rejecting the null hypothesis and indicating a long-term association between variables. INFLR, CPI, PPI, EXCHR, EXCHRF and TB and RGDP in Nigeria have a long-term association..

Table 4.8: ARDL Cointegrating And Long Run Form

Dependent Variable: LOGRGDP

Selected Model: ARDL(2, 0, 0, 0, 0, 0)

Date: 05/21/24 Time: 19:12

Sample: 1986 2022

Included observations: 19

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGRGDP(-1))	-0.448008	0.291065	-1.539206	0.1548
D(LOGINFLR)	0.023547	0.023117	1.018591	0.3324
D(LOGCPI)	0.040417	0.054614	0.740061	0.4763
D(LOGPPI)	0.997381	1.668990	0.597595	0.5634
D(LOGEXCHR)	0.012857	0.115472	0.111339	0.9136
D(LOGEXCHRF)	-0.003239	0.015117	-0.214262	0.8346
D(LOGTB)	0.016530	0.038987	0.423993	0.6805
CointEq(-1)	-0.110182	0.047920	-2.299272	0.0443

$$\text{Cointeq} = \text{LOGRGDP} - (0.2137*\text{LOGINFLR} + 0.3668*\text{LOGCPI} + 9.0522 * \text{LOGPPI} + 0.1167*\text{LOGEXCHR} - 0.0294*\text{LOGEXCHRF} + 0.1500*\text{LOGTB}$$

-8.7185)

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGINFLR	0.213712	0.230948	0.925370	0.3766
LOGCPI	0.366826	0.466551	0.786251	0.4500
LOGPPI	9.052161	13.519254	0.669576	0.5183
LOGEXCHR	0.116686	1.064086	0.109658	0.9148
LOGEXCHRF	-0.029397	0.134261	-0.218952	0.8311
LOGTB	0.150025	0.333067	0.450436	0.6620
C	-8.718503	15.068251	-0.578601	0.5757

Source: Econometric Views Version 9.0 Output (2024)

The Error Correction coefficient (cointEq-1) is assessed at 0.2137, correcting previous periods' disequilibrium by 21.37% yearly. Increasing inflation and exchange rate variations by 21.31% annually will enhance them over time. Durbin Watson Statistics (2.8996) showed the model is not serially correlated. Tested hypotheses from previous chapters: This study examined how INFLR, CPI, PPI, EXCHR, EXCHRF, and TB affected Nigerian RGDP from 1986 to 2022. The study examined how FPII indicators INFLR, CPI, PPI, EXCHR, EXCHRF, and TB affect Nigerian RGDP. Thus, six research topics and six null hypotheses were proposed. Given this, the following individual results are discussed:

Table 4.8 clearly shows that a unit increase in INFLR will boost RGDP by 0.0235 and 0.2137 (2.35% and 21.37%) in the medium and long term. This further showed that INFLR has insignificant positive short- and long-term effects on RGDP and may extend to Nigeria's. INFLR failed statistical significance tests for short- and long-term results. High inflation diminishes consumer purchasing power and disposable income, lowering RGDP. To manage inflation, the government may need contractionary monetary policies, which may hurt RGDP growth temporarily. Inflation may also deter foreign investment and consumer confidence, slowing economic progress. This finding supports Ugomma and Chijioke (2024) and Onwubuariri, Oladeji, and Bank-Ola (2021) but contradicts Iheanachor and Ozegbe (2021).

Study found CPI had a short- and long-term favorable negligible effect on RGDP. Positive results indicate that a 1% CPI increase will raise RGDP by 0.0404 (4.04%) in the short run and 0.3668 (36.68%) in the long run. Thus, a country with a high CPI may be unfavorable in the long and short term. The CPI is not statistically significant enough to affect RGDP yet. In the short and long term, CPI has little effect on RGDP. The consumer price index rises when goods and services cost more, reducing consumer spending and RGDP growth. Price controls and subsidies to stabilize the CPI may alter fiscal resources and market mechanisms, affecting GDP. This result supports Ugomma and Chijioke (2024) and Onwubuariri, Oladeji, and Bank-Ola (2021) but contradicts Iheanachor and Ozegbe (2021).

Table 4.8 shows that a unit increase in PPI will improve Nigeria's RGDP by 0.9974 (99.74%) in the short run and 9.0522 (905.22%) in the long run. This showed that greater PPI in Nigeria increases the likelihood of a positive RGDP impact. The PPI failed the statistical significance test in the short and long runs with p-values of 0.5634 and 0.5183. The producer price index affects corporate production costs, pricing tactics, and profitability. A big increase in PPI may raise production costs, lower profit margins, and restrict investment, which could hurt real GDP growth.

The analysis found that EXCHR had a short-term and long-term positive insignificant effect on RGDP. The positive result is that a 1% increase in EXCHR will boost RGDP by 0.0129 (1.29%) and 0.1167 (11.67%). Increasing the country's EXCHR had positive long-term and short-term consequences. EXCHR are not statistically significant enough to affect RGDP in the medium or long term with p-values of 0.9136 and 0.9148. We conclude that EXCHR has no significant short- or long-term effects on RGDP. Depreciating exchange rates make local items cheaper for international customers, which could enhance GDP through export revenues. A declining currency rate can also cause imported inflation, which reduces consumer spending and GDP growth. This result supports Ugomma and Chijioke (2024) and Nwankwo (2023) but contradicts Cletus and Onyeonu (2023).

EXCHRF negatively affected RGDP short- and long-term, according to the findings. In the short and long term, a 1% increase in EXCHRF will cut RGDP by -0.0032 (0.32%) and -0.0294 (2.94%). Increasing the country's EXCHRF has detrimental long-term and short-term effects. EXCHRF are not statistically significant enough to affect RGDP in the medium or long term with p-values of 0.8346 and 0.8311. We conclude that EXCHRF has no significant short- or long-term effects on RGDP. Sharp exchange rate changes can cause economic instability, investor skepticism, and capital flight. Sudden exchange rate swings can disrupt trade agreements and contracts, impacting import and export operations and GDP growth. This result supports Ugomma and Chijioke (2024) and Nwankwo (2023) but contradicts Cletus and Onyeonu (2023).

The preceding regression showed that TB had a short- and long-term positive effect on Nigeria's RGDP. The positive result matches the study's predictions. The positive co-implications coefficients indicate that a 1% increase in TB will enhance Nigeria's RGDP by 0.0165 (1.65%) in the short run and 0.1500 (15.00%) in the long term. The short- and long-term TB p-values are 0.6805 and 0.6620, both above 5%. Thus, TB will boost Nigeria's RGDP slightly in the medium and long term. Trade surpluses stimulate exports and economic activity, which boosts GDP. Conversely, a trade deficit (imports surpassing exports) can strain foreign exchange reserves and potentially lower GDP growth if not managed through export- or import-control measures. This supports Onwubuariri, Oladeji, and Bank-Ola (2021) and Oke and Adetan (2019) but contradicts Kilicarslan (2018).

Conclusion

This study evaluated how inflation and exchange rate variations affect emerging nation economic growth. The 1986–2022 study was conducted in Nigeria. The analysis used CBN Statistical Bulletin and Annual Report data. This study uses ex-post facto and quasi-experimental methods. Inflation, exchange rate fluctuations, and trade balance affect Nigeria's economic growth [proxied by Real Gross Domestic Product (RGDP)]. INFLR had a short-term p-value of 0.3324 and a long-term p-value of 0.3766. This implies that INFLR does not affect RGDP in Nigeria in the medium or long term; CPI p-values are 0.4763 and 0.4500. PPI has short- and long-term p-values of 0.5634 and 0.5183, respectively, suggesting that CPI has no significant effect on Nigerian RGDP. This implies that PPI has no significant effect on Nigeria's RGDP in the medium and long term; EXCHR had p-values of 0.9136 and 0.9148. EXCHRF's short- and long-term p-values of 0.8346 and 0.8311 indicate that EXCHR's impact on Nigeria's RGDP is significant. This implies that EXCHRF has no significant effect on Nigeria's RGDP in the short and long term, and TB has p-values of 0.6805 and 0.6620. TB appears to have no short- or long-term effect on Nigeria's RGDP. The research found that inflation and currency rate fluctuations had little effect on economic growth in developing nations like Nigeria.

Recommendations

Recommended based on findings:

1. Since INFLR has a positive and insignificant influence on RGDP in the medium and long term, Nigerian monetary authorities should focus on effective monetary policies to manage inflation. The Central Bank of Nigeria should regulate inflation and stabilize prices with interest rates and reserve requirements to promote sustainable economic growth.
2. Since CPI has a positive and insignificant effect on RGDP in the short and medium term, policymakers should actively watch CPI changes and adjust fiscal and monetary policies. Social welfare programs and critical goods subsidies can reduce the impact of growing consumer prices on Nigeria's real GDP growth.
3. PPI fluctuations affect production costs and real GDP growth. Nigerian policymakers should prioritize local industry assistance, producer price stability, and corporate competition to boost economic performance. Improving infrastructure, eliminating regulations, and encouraging innovation can boost productivity and competitiveness.
4. Nigeria should use a flexible exchange rate framework and prudent monetary and fiscal policies to boost trade competitiveness and economic performance. A stable and competitive exchange rate boosts exports, foreign investment, and GDP. Increasing export diversification and productivity in important sectors can also reduce the impact of exchange rate volatility on actual GDP.
5. Nigerian policymakers should manage risk as exchange rates fluctuate to protect real GDP growth. Hedge mechanisms, foreign currency reserves management, and coordinated monetary authority measures can stabilize exchange rates and reduce business uncertainty. A transparent and well-regulated foreign currency market boosts investor confidence and economic stability.
6. Nigeria needs a positive trade balance to grow economically. Policymakers should promote export competitiveness, diversification, and import dependency reduction. Improving trade infrastructure, reducing customs, and promoting regional trade agreements can boost trade balance and real GDP. Nigeria's export capacity and resilience to external shocks can be improved by investing in human capital, technology transfer, and value-added production.

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