Impact of Exchange Rate Volatility on Selected Macroeconomic Variables in Nigeria

[1.]Nwangene, Emezie Kene
nwangenee@gmail.com

[2.]Prof. Akamobi Anthony A.
aa.akamobi@coou.edu.ng
[1,2.]Department of Economics
Chukwuemeka Odumegwu Ojukwu University,
Igbariam Campus

Abstract

Examining the combined impact of exchange rate volatility on economic growth, inflation, and unemployment provides a more comprehensive understanding of their interconnections and overall effects on an economy. Specifically, this study examined the effect of exchange rate volatility on economic growth, to appraise the effect of exchange rate volatility on inflation, and to assess the influence of exchange rate volatility on unemployment rate in Nigeria from 1981 to 2021. The study employed Feasible Generalized Least Square (FGLS) method as the analytical technique. The findings of this study revealed that exchange rate volatility has a significant negative impact on economic growth, indicating that it retards growth. Additionally, exchange rate volatility has a significant positive impact on inflation, suggesting that it escalates inflationary pressures. Furthermore, exchange rate volatility has a significant positive impact on unemployment, indicating that it contributes to higher unemployment rates. However, the study concluded that exchange rate volatility has a significant negative impact on economic growth in Nigeria. Exchange rate volatility has a significant positive impact on inflation and unemployment in Nigeria. In light of these findings, it is recommended that policymakers in Nigeria should focus on implementing measures to reduce exchange rate volatility, as it negatively affects economic growth, increases inflationary pressures, and contributes to unemployment. These measures may include enhancing exchange rate stability through appropriate monetary and fiscal policies, promoting export diversification, and attracting foreign direct investment to improve exchange rate management and stability.

NG Journal of Social Development

Vol. 16 Issue 1 (2024)
ISSN(p) 0189-5958
ISSN (e) 2814-1105 Home page
https://www.ajol.info/index.php/ngjsd

ARTICLE INFO:
Keyword
Exchange rate volatility, economic growth, inflation, unemployment rate

Article History
Received: 30th October 2024
Accepted: 28th December 2024

DOI:*https://dx.doi.org/10.4314/ngjsd.v16i1.2*

1. Introduction

One of the most treasured objectives of macroeconomics is macroeconomic stability. It is the cornerstone of any effective strategy to promote economic welfare and sustain growth. The government, firms, and households all incur enormous economic losses as a result of macroeconomic instability, which could exacerbate catastrophic economic unrest (Goshit & Terese, 2020; Olamide, Ogujiuba & Maredza, 2022). For instance, retarding growth, might harm the poor and undermine economic returns for businesses (Fofanah, 2021). Inflation is a regressive and arbitrary tax, with the burden falling disproportionately on those at the bottom of the income hierarchy (Ighoroje & Orife, 2022). Analogously, a high unemployment rate typically causes a loss of labour, ineffective demand for products and services, poor productivity, a rise in the poverty rate, dwindling government revenue as well and an economic slowdown (Cahyadin & Ratwianingsih, 2020). Figure 1 displays the performance of three macroeconomic variables in Nigeria namely inflation, unemployment and economic growth.

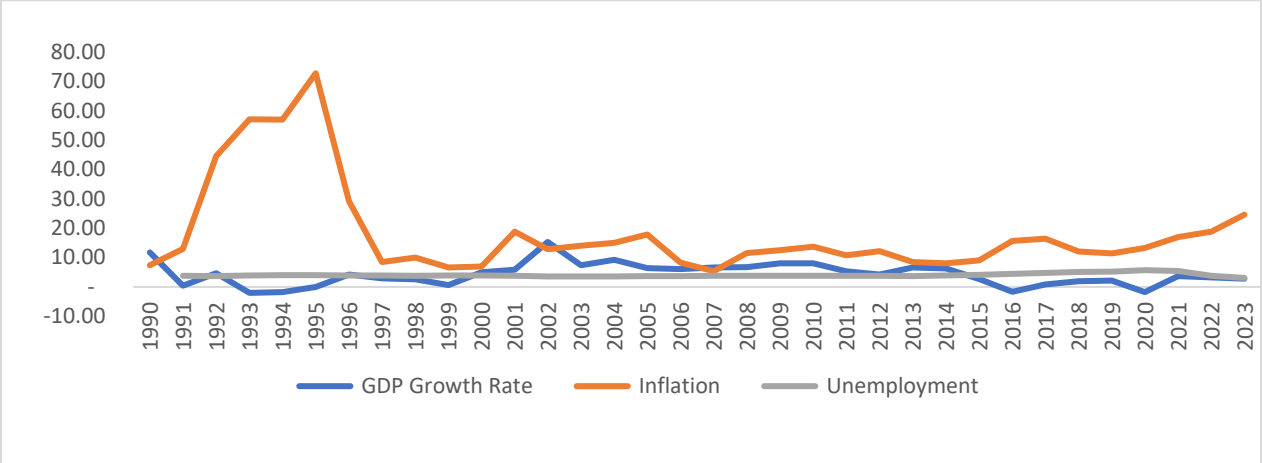

Figure 1.1: Performance of selected macroeconomic variables
Source: World Bank (2023)

Economic growth is a critical macroeconomic variable of any economy. Economic expansion is the most successful strategy for reducing poverty and enhancing the quality of life in developing countries. According to Shaik and Gona (2020) and Ramoni-Perazzi and Romero (2022), it is the driving force behind a nation's prosperity and is determined by the pace at which a nation's national income is growing; rising national income should lead to more advantages for the populace. As a result, rapid and sustained economic expansion is seen as the single most crucial component in reducing poverty and stimulating development. This urge for economic expansion is considerably more important in developing economies than in industrialized economies. However, Nigeria's economic growth has been rather unimpressive. For instance, as shown in Figure 1, before increasing to 5.9% in 1985, Nigeria had a negative growth rate of 13% in 1981. In 1990, the nation's growth rate climbed to 11.8% before decreasing to 5% in 2000. Before witnessing a negative growth rate of 1.6%, the Nigerian economy grew at 6.7% and 6.3% during 2013 and 2014. The economic contraction witnessed in 2016 was linked to a drop in oil prices. The nation's economic growth contracted by 1.8% in 2020 attributed largely to the COVID-19 pandemic before experiencing a positive growth rate of 3.6% in 2021.

Another critical macroeconomic variable is inflation which is a consistent increase in the total cost of goods and services in a particular economy. This issue has existed in Nigeria for a very long time. Rapid economic growth and stable inflation are the two problems that Nigeria's monetary

authorities must overcome. Nigeria has seen diverse inflationary tendencies, with inflation rates ranging from single digits to double digits (Figure 1). Nigeria experienced repeated episodes of high inflation, with rates exceeding 25% in some cases between 1980 and 2021 (see Figure 1). According to Husaini and Lean (2021) and Ighoroje and Orife (2022), after a country has experienced annual inflation rates ranging from 15% to 25% for continuous periods, achieving a steady and lower inflation rate only through monetary policy will be unachievable. Inflation in Nigeria reached its highest point in the 1980s and 1990s. For instance, the inflation rate in Nigeria rose from 23.2% in 1983 to 54.5% in 1988 before increasing to 72.8% in 1995. The inflation rate dropped to 17.9% in 2005 before decreasing to 13.7% in 2010. The nation's inflation rate was 17% in 2021. According to Ighoroje and Orife (2022), the government's fiscal expansionary operations in the 1980s, which were financed with oil revenue monetization and credit from the nation's apex bank, as well as the repurchase of existing obligations in local currency, had a significant impact on inflation. This phase lasted throughout the 1990s and corresponded with a period of fiscal expansion and money supply growth, which resulted in increased inflationary pressures as a result of expansion in the money supply.

The issue of unemployment is one of Nigeria's primary macroeconomic issues (Ani, Joel & Baajon, 2019; Adzugbele, Eze, Morba & Nwokocha, 2020). For instance, according to Nwankwo and Ifejiofor (2014), the rate of unemployment rose from 1.7% in 1967 to 7.2% in 1981. In 1985, 1990, and 1995, the unemployment rate was 6.5%, 5.5%, and 6.2%, respectively. Nevertheless, it increased to 13.1% in 2000 and 21.4% in 2010. It peaked at an all-time high of 27.4% in 2012 before dropping to 24.7% in 2013. The National Bureau of Statistics revised its approach to calculating unemployment in 2014, which resulted in the lowest rate of 7.8% in more than ten years. The rate gradually increased from 7.8% in 2014 to 9.9% in 2015 and 12.2% in 2016. The unemployment rate increased to 18.8% in 2017. In 2018, it climbed even higher to 23.1% and in 2020, it rose to 33.3% signifying that the unemployment rate in the country has increased rapidly over time (National Bureau of Statistics, 2020).

According to historical records, the unemployment issue first surfaced in the late 1970s with the commercialization of crude oil discovered at Oloibiri. Raifu (2019) and Nwokoye, Igbanugo, Mgbemena and Dimnwobi (2019) argued that the abandonment of the agriculture sector worsened the issue. Before crude oil was discovered, the economy was mostly driven by the agricultural sector. Because of the oil sector's expansion and the agricultural sector's perceived unattractiveness, many agricultural employees left farming and other agricultural-related businesses in pursuit of job prospects in metropolitan regions where the oil industry was considered to be thriving (Olubusoye, Salisu & Olofin, 2022). However, when they arrived in the cities, many of them were jobless since the oil industry was unable to absorb the flood of labour. In addition to this, several variables have been identified as contributing to Nigeria's persistent increase in unemployment which includes corruption, poor infrastructures, a dysfunctional education system and an unfavourable environment for business to thrive (Raifu, 2019; Raifu, & Abodunde, 2020).

It is common knowledge that developing economies need stable exchange rates to grow sustainably. Therefore, monetary authorities strive to prevent a significant difference between the official exchange rate and parallel exchange rates. As noted by Fofanah (2021) and Isah and Ekeocha (2023), exchange rates in Africa have been extremely volatile notably since the switch to

a system of flexible exchange rates, which had adverse effects on several macroeconomic variables. Nigeria, for example, used a fixed exchange rate before 1986 but thereafter adopted a flexible exchange rate regime. Consequently, the official Naira exchange rate was permitted to float in reference to other currencies, within a predetermined band, enabling market forces of supply and demand to decide changes within the band (Emenike, 2016). The enlarged foreign exchange market, inter-bank foreign exchange market, second-tier foreign exchange market, autonomous foreign exchange market and the Dutch auction system (DAS) containing both wholesale and retail DAS are some of the policies used to ensure exchange rate stability in Nigeria (Emenike, 2016). The failure of each policy to create long-term stability in the Nigerian exchange rate led to the implementation of another. The naira's value versus the US dollar continues to vary greatly despite the Nigerian monetary authority's efforts to preserve exchange rate stability through the introduction of these policy efforts (Akinwolere, 2021; Isah & Ekeocha, 2023).

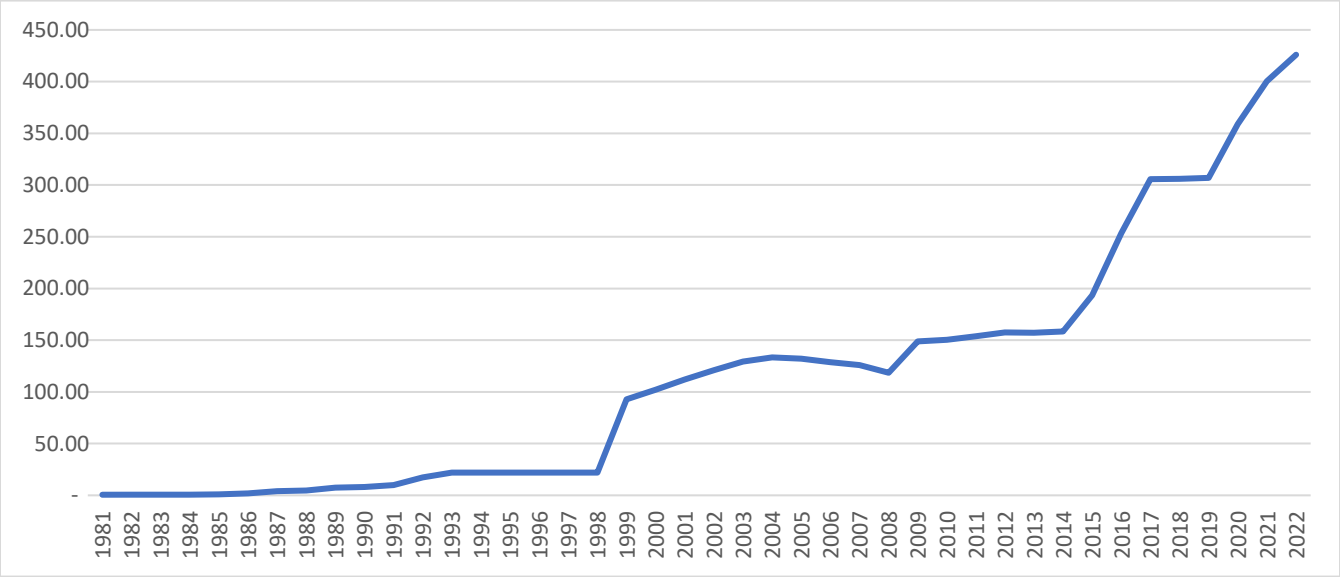

Figure 1.2: Nigeria's exchange rate
Source: Central Bank of Nigeria (2022)

Notwithstanding these policy interventions to ensure exchange rate stability in Nigeria, the Naira continues to fluctuate significantly versus the US dollar. Opara, Emenike, and Ani (2015) noted that the Naira strengthened against the US dollar from $0.71 in 1970 to $0.62 in 1975 and then $0.55 in 1980. Howbeit, the 1980s saw a decline in the exchange rate. For example, the naira fell from ₦0.61 in 1981 to ₦2.02 in 1986, and then to ₦8.04 in 1990 (See Figure 2). The exchange rate was ₦102.11 by 2000, and by 2005, the exchange rate was ₦132.15. At the end of 2021, the nation's exchange rate is ₦399.96/US$. While these figures were official rates, in the parallel market in most of 2022, a dollar was exchanged for 700-800 naira showing that the naira has depreciated significantly against the dollar (Isah & Ekeocha, 2023). This significant depreciation in the Naira's value exacerbates the volatility of exchange rates. Against this backdrop, we propose to appraise the influence of exchange rate volatility on macroeconomic variables in Nigeria.

1.2. Statement of the Problem

Promoting stable and sustained economic growth, achieving full employment, and maintaining price stability are any country's three basic macroeconomic goals. Achieving these targets is critical to attaining most of the SDGs by 2030. Statistics from the World Bank (2022) have shown

that Nigeria's macroeconomic outlook has been startling. For instance, Nigeria's growth rate was 2.2%, -1.8% and 3.6% in 2019, 2020 and 2021 respectively. In the same period, the average global GDP growth rate was 2.6%, -3.1% and 5.9% respectively while that of sub-Saharan Africa (SSA) was 2.6%, -2% and 4.1% (World Bank, 2022). The contractions witnessed in 2020 were attributed to the detrimental effects of the COVID-19 pandemic (Akinwolere, 2021). However, the worrying issue is that low economic growth is detrimental to developing economies such as Nigeria, as it is associated with increased poverty and crime. Similarly, Nigeria has a long history of having a high unemployment rate. As per Statistics from the National Bureau of Statistics (2020), the nation's unemployment rate rose from 7.2% in 2014 to 12.2% in 2016 and ballooned to 33.3% in 2020. The social and economic effects of unemployment in Nigeria are profound. On the other hand, according to Word Bank (2022), Nigeria's inflation rate increased from 6.9% in 2000 to 17% in 2021. This shows that the country's inflation rate is significantly higher than the world (3.5%), SSA (4.6%) as well as Low and middle-income (4.3%) averages. Nigeria's ongoing double-digit inflation has increased concern among decision-makers and investors. Poor macroeconomic results have negative social, economic, and political effects on society in the form of high levels of poverty and dependency, militancy, and terrorist activity (Ani, Joel & Baajon, 2019). Consequently, several interventions have been introduced over the years to address these concerns. Prominent among these interventions include the National Economic Empowerment and Development Strategy (NEEDS), the N-Power Scheme, and the Economic Recovery and Growth Plan among others. Equally, the country's apex bank has experimented with different policies cutting across monetary policy tightening and easing measures. These policies have been ineffective in addressing the nation's poor macroeconomic outcomes.

Exchange rate volatility is a critical macroeconomy driver (Fofanah, 2021; Ramoni-Perazzi& Romero, 2022). The exchange rate is a price variable that could affect the price-setting function of firms. One unique feature of an open economy is that firms purchase and sell in the international market using currencies other than their home currency. Again, firms' investment and sales plans are made based on the assumption of certain exchange rates. If this realization changes, especially frequently and persistently, firms may experience distortions which could affect the overall economic output, inflation and unemployment.

Although there have been studies on exchange rate volatility on macroeconomic variables in the literature. Prior research has overlooked the combined impact of exchange rate volatility on economic growth, inflation, and unemployment, as they have focused on analyzing the relationship between exchange rate volatility and each variable individually. Consequently, there is a limited understanding (to this research knowledge) of how exchange rate volatility affects these three macroeconomic factors. Without considering the interconnections and interactions between exchange rate volatility, economic growth, inflation, and unemployment, the existing literature fails to offer a comprehensive understanding of their collective dynamics. Therefore, it is necessary to conduct research that simultaneously investigates the influence of exchange rate volatility on economic growth, inflation, and unemployment to gain insights into their overall impact on an economy. This type of analysis would allow for a more comprehensive understanding of the intricate relationship between exchange rate volatility and these crucial macroeconomic variables. The study aims to significantly enhance understanding of the relationship between exchange rates and important economic factors in Nigeria from 1981 to 2021.

1.3 Research Objectives

i. To ascertain the impact of exchange rate volatility on economic growth of Nigeria
ii. To examine the effect of exchange rate volatility on inflation in Nigeria
iii. To assess the influence of exchange rate volatility on Nigeria's unemployment rate

2. Review of Related Literature

2.1 Conceptual Literature

The key concepts in the study are exchange rate volatility, economic growth, inflation and unemployment and they have been explained below.

(a) Exchange Rate Volatility

Exchange rate fluctuations essentially affect the prices of imported products, services, and exports. According to Fofanah (2021), exchange rate volatility or shock or instability describes the rapid movement of the value of one currency relative to another. This study aligns with this view. In a similar vein, Musa (2021) defined exchange rate shocks as the phenomenon in which the value of one currency sharply increases in relation to another over a very short period.

(b) Economic Growth

According to Olamide, Ogujiuba and Maredza (2022), economic growth is the term used to describe the expansion in the value of goods and services produced by an economy over a period of time. Put differently, economic growth could be viewed as the enhancement in the commodities an economy produces over some time. Conversely, Iqbal, Mahmood, Nosheen and Wohar (2022) consider economic growth as a continued increase in an economy's actual national income over time.

(c) Unemployment

Since the unemployment rate typically indicates the economic health of a country, unemployment is a popular notion in economic literature. According to Adzugbele, Eze, Morba and Nwokocha (2020), unemployment is the proportion of the labour force that is competent and willing to work but is not employed. This study adopts Adzugbele, et al., (2020) view. Likewise, as noted by Atya (2017), the percentage of people without a job in an economy's labour force is known as the unemployment rate. Likewise, Cahyadin and Ratwianingsih (2020) view unemployment as the number of jobless persons in a given economy often expressed as a proportion of the labour force.

(d) Inflation

Ighoroje and Orife (2022) define inflation as a yearly increase in the price of commodities consumed by consumers in an economy. Similarly, Inyiama and Ekwe (2014) view inflation as the quantitative measure of the rate at which the average price level of a specific basket of goods and services in an economy increases over time. In a similar vein, Husaini and Lean (2021) defined inflation as a rise in the cost of goods and services.

2.2 Basic Theories

Two theories that are relevant to the subject matter were discussed in this section namely the Keynesian theory of inflation and the augmented Solow model.

(1) Keynesian Theory of Inflation

The Keynesian theory of inflation, initially proposed by Keynes and later popularized by his followers, operates through the investment-saving mechanism (Ireland, 2009). Keynes identified two types of inflation: demand-pullandcost-push. The demand-pull theory, described as an "inflationary gap" (Keynes, 1940), arises when aggregate demand—comprising consumption, investment, and government spending—exceeds total supply at full employment, causing price levels to rise. Unlike monetarist views, Keynes did not emphasize excess money supply as a cause of inflation but instead linked it to imbalances between saving and investment. Inflation helps increase savings by redistributing income from wage earners to profit earners, thereby reducing the inflationary gap until saving and investment reach equilibrium.

The cost-push theory, introduced in Keynes' *General Theory* (1936), suggests that inflation can result from rising production costs, even when demand remains stable. Higher costs, such as increased wages, are passed on to consumers, driving up prices. If wages remain unchanged, price levels may still rise due to diminishing returns from higher employment or profit-driven pricing by oligopolists. Ultimately, Keynes' theories emphasize inflation as a consequence of macroeconomic imbalances rather than solely monetary expansion.

(2) Augmented Solow Model

The Mankiw-Romer-Weil (MRW) augmented-Solow model, introduced by Mankiw, Romer, and Weil (1992), expands the classic Solow growth model by incorporating human capital and technological advancement to explain differences in economic growth among nations. It assumes a Cobb-Douglas production function, exogenous technological progress, constant human capital growth, a stable savings rate, and diminishing returns on capital (Mankiw, Romer & Weil, 1992).

However, the model has limitations. It assumes technology is exogenous, ignores labor force heterogeneity, and does not consider institutional factors like governance and property rights. Critics argue that these factors significantly influence economic growth (Idris, Ashemi & Musa, 2019). Although the MRW model does not explicitly address exchange rate volatility, its insights can be applied to understand indirect effects on economic growth, inflation, and unemployment. Exchange rate fluctuations may reduce investment, hinder export-driven growth, and lead to inflation by increasing import costs. Additionally, economic instability caused by currency fluctuations can indirectly impact employment levels by affecting business confidence and purchasing power (Inyiama & Ekwe, 2014; Jeelani, 2016; Ighoroje & Orife, 2022).

2.3 Empirical Literature

In four West African Monetary Zone (WAMZ) economies between 1992 and 2017, Fofanah (2021) looked at how exchange rate instability influenced economic growth. Applying the random effects, fixed effects and pooled OLS, the study highlighted that the influence of exchange rate volatility on economic growth is negligible. Focusing on 194 economies between 1995 and 2019, Ramoni-Perazzi and Romero (2022) studied the influence of exchange rate volatility on economic growth. Using System GMM, the study reveals that exchange rate volatility has a considerable detrimental impact on economic growth. Jayathilaka, et al., (2022) applied VAR as well as quarterly data from Sri Lanka between 2015 and 2021 to unearth the effects of the exchange rate on economic growth. The exchange rate had a substantial positive influence on economic growth. Using the ARDL approach, Iqbal, Mahmood, Nosheen and Wohar (2022) studied how the

misalignment of exchange rates affects economic growth in India and reported that the misalignment of exchange rates has a negative influence on India's economic growth. Pekarčíková, Vaněk and Sousedíková (2022) employed data from 1980 to 2019 to examine the factors that influence the Organization of Petroleum Exporting Countries (OPEC) economic growth and the authors discovered that exchange rates are detrimental to economic growth. Olamide, Ogujiuba, and Maredza (2022) investigated the impact of exchange rate volatility on economic growth in the Southern African Development Community (SADC), and the authors discovered that exchange rate volatility is negatively related to economic growth.

Husaini and Lean (2021) investigated how exchange rates affect disaggregated inflation in three Asian economies namely Thailand, Indonesia and Malaysia. Using non-linear ARDL, the study revealed that in all nations, currency depreciation has a major impact on raising both the consumer price index (CPI) and producer price index (PPI) while currency appreciation failed to cut both the PPI and CPI. Ighoroje and Orife (2022) appraised the influence of the exchange rate on inflation in Nigeria between 1987 and 2019 and the study established that the exchange rate is not a significant driver of inflation in Nigeria. In a similar study of Sri Lanka Jayathilaka, et al., (2023) utilized VAR to reveal that economic growth is encouraged by the nation's exchange rate. Relatedly, Ramos-Herrera and Sosvilla-Rivero (2023) utilized data from diverse income categories from 1996 to 2016 and reported that the deviations from the equilibrium exchange rate hinder the rate of economic growth, irrespective of the income level of the country. The findings demonstrate that this effect is most prominent in advanced economies, followed by low-income developing nations, and finally, emerging economies. Likewise, Maku, Ishioro and Asagba (2023) employed the VECM and highlighted that there is a decrease in economic growth as Nigeria's exchange rate depreciates from 1985 to 2021.

Çitçi and Kaya (2023) investigated how exchange rate uncertainty affected inflation in 149 nations between 1980 and 2017. The study showed that exchange rate uncertainty significantly and positively affects inflation. Analogously, Akpan and Udo (2023) deployed ARDL on Nigerian data from 1981 to 2021 and reported that inflation is positively and significantly influenced by the exchange rate. In Ghana, Valogo, Duodu, Yusif and Baidoo (2023) used the threshold autoregressive (TAR) approach and showed that there is a significant and positive pass-through effect on inflation when the monthly exchange rate depreciation surpasses a threshold of 0.70%. This implies that a devaluation above this level has a major effect on and raises inflation rates. The connection between exchange rate and unemployment in 4 selected Asian nations from 1980 to 2017 was studied by Cahyadin and Ratwianingsih (2020) who established that the region's exchange rate lowers the unemployment rate. Adzugbele, Eze, Morba and Nwokocha (2020) appraised the influence of the exchange rate on Nigeria's unemployment rate between 1983 and 2015. Utilizing the ARDL technique, the study demonstrated that the real exchange rate has increased the rate of unemployment.

Ugwunna, Ezeanyeji, Nwabunwanne, and Onwe (2024) investigated the determinants of capital flight and assessed its effects on economic growth in Nigeria from 1981 to 2020. The research utilised the Auto-Regressive Distributed Lag (ARDL) Model. The findings indicated that external debt and the current account balance contribute to capital flight in Nigeria. Conversely, capital flight negatively impacts Nigeria's economic growth. The depreciation of the exchange rate and elevated inflation rates hinder economic growth, hence promoting increased capital flight.

Ugwunna and Obi (2023) analysed the determinants of economic growth in Sub-Saharan Africa, focusing specifically on middle-income economies from 1996 to 2020. Fixed effect and random effect analytical approaches were utilised for the analysis. The results indicated that GDP per capita, gross fixed capital creation, population growth, exchange rate, and foreign direct investment exert positive and significant influences on economic growth.

Imoagwu, Umunna, Okaforocha, Ugwunna, and Eze (2023) examined the effects of trade liberalisation on unemployment in Nigeria from 1981 to 2022. The study utilised Ordinary Least Squares. The findings indicate that trade liberalisation, encompassing both export and import activities, has a negative and substantial correlation with unemployment in Nigeria; this suggests that an increase in both export and import trade will lead to a reduction in unemployment within the nation. Izilein, Chukwuma, and Odjegba (2014) investigated the factors influencing currency rate fluctuations in Nigeria from 1980 to 2011. The ordinary least squares and Cochrane-Orcutt regression methods were employed to analyse the data. The findings demonstrate that the inflation rate, interest rate, and real gross domestic product are crucial factors in influencing exchange rate fluctuations in Nigeria.

2.4 Gaps in Literature

Upon examining the extant literature pertaining to the topic, it is discovered that previous pertinent investigations, including those carried out by Inyiama and Ekwe (2014), and Ighoroje and Orife (2022), Imoagwu, et al., (2023) predominantly employed the ordinary least squares (OLS) technique in their analyses, particularly within the Nigerian context. On the other hand, the feasible generalized least squares (FGLS) approach was utilized in this investigation. FGLS offers advantages over OLS, including handling autocorrelation, handling heteroscedasticity, and increasing parameter estimation efficiency among others. The study improved the validity and reliability of our parameter estimations and made a valuable contribution to this field of study by using FGLS to solve heteroscedasticity and autocorrelation-related problems.

3. Method and Procedure

Based on pertinent theories covered in the literature section, we propose a model in this chapter and suggest an econometric model for data analysis.

3.1 Theoretical Framework

The Mankiw-Romer-Weil augmented-Solow model (Mankiw, et al., 1992) serves as the foundation for the study's theoretical framework. This extension of the traditional Solow model allows one to include exchange rates and other variables in the macroeconomy model. The framework is anchored on the following assumptions. First, the production function is a typical Cobb-Douglas function. Second, the production function exhibits constant returns to scale in inputs.

3.2 Model Specification

Objective 1: Impact of exchange rate volatility on economic growth

Economic growth is a function of capital per labour, exchange rate volatility and other variables:

$$ecog_t = \beta_0 + \beta_1 k_t + \beta_2 ev_t + \beta_3 z_t + \varepsilon_{1t} \quad 1$$

Where ecog = economic growth

ev = exchange rate volatility
e = other variables.
β_i = parameters to be estimated
ε_1 = stochastic error

However, as noted by Sala-I-Martin, Doppelhofer and Miller (2014), economic growth is one of the most critical gauges of the macroeconomy. Sala-Martin, et al., (2014) affirmed that economic growth trajectory is driven by monetary conditions and fiscal policy stance. Incorporating these views, would yield:

$$ecog_t = \beta_0 + \beta_1 k_t + \beta_2 ev_t + \beta_3 mop_t + \beta_4 fip_t + \beta_5 z'_t + \varepsilon_{1t} \quad 2$$

Where *mop* and *fip* refer to monetary policy and fiscal policy stance respectively.

Tekin (2017) also contends that trade is a key driver of economic growth. This view is also in line with Adam Smith and Ricardian's thesis that where absolute or comparative advantage exists as the case may be, trade will remain an essential ingredient of economic growth. However, Singh (2019) opined that it is not the total trade volume that matters for growth but the net trade effect, which he captured using trade balance.

$$ecog_t = \beta_0 + \beta_1 k_t + \beta_2 ev_t + \beta_3 mop_t + \beta_4 fip_t + \beta_5 tb_t + \beta_6 oilr_t + \varepsilon_{1t} \quad 3$$

Where *tb* stands for trade balance and *oilr* represents oil revenue

Objective 2: Impact of exchange rate volatility on inflation

Suppose the summation effect of exchange rate volatility is simply indicated as *ev* for all firms;

$$Inf_t = \varphi_0 + \varphi_1 e_t + \varphi_2 z_t + \varepsilon_{2t} \quad 4$$

Where Inf = p = inflation, z = other variables

But, following Friedman (1958) and Okoye, Olokoyo, Ezeji, Okoh and Evbuomwan (2019), inflation is a monetary phenomenon. In other words, if the neutrality of the money hypothesis holds, changes in money supply (MOG) will translate in some proportions to inflation. This is also in line with the definition of inflation as a condition where too much money is chasing too few goods. Okoye, et al., (2019) also opined that changes in the monetary policy position measured by the monetary policy rate (MPR) could also spike disequilibrium in the inflation rate, depending on the direction of change in the MPR.

$$Inf_t = \varphi_0 + \varphi_1 e_t + \varphi_2 mog_t + \varphi_3 mpr_t + \varphi_4 z'_t + \varepsilon_{2t} \quad 5$$

Thus, the inflation equation to be estimated is specified as:

$$Inf_t = \varphi_0 + \varphi_1 ev_t + \varphi_2 mog_t + \varphi_3 mpr_t + \varphi_4 def_t + \varphi_5 pdg_t + \varphi_6 outg_t + \varphi_7 oilr_t + \varepsilon_{2t} 6$$

Where *def, pdg and oilr refer* to fiscal deficit, the growth rate of public debt and oil revenue respectively.

Objective 3: Impact of exchange rate volatility on unemployment

$$uep_t = \rho_0 + \rho_1 ev_t + \rho_2 fip_t + \rho_3 act_t + \rho_4 pdg_t + \rho_5 inf_t + \rho_6 oilr_t + \varepsilon_{3t} 7$$

All variables are as earlier defined.

Estimation of the Volatility Series

The term "exchange rate volatility" describes the standard deviation of change in exchange rate over a given time range. In this context, the variable in question is quantified as the variance of the nominal exchange rate. It is specifically defined as a Generalized Autoregressive Conditional Heteroscedastic (GARCH 1, 1) model applied to the nominal exchange rate. We calculate the nominal exchange rates mean and variance equation using the GARCH (1,1) framework to derive the volatility series.

Mean Equation: $e_t = \alpha_0 + e_{t-1} + u_t$ 3.8

Conditional Variance Equation: $\sigma_t^2 = \omega + \alpha\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2$ 8

The predicted value of the variance equation is the volatility series. The information provided by ε_{t-1}^2 (the ARCH term) and σ_{t-1}^2 (the GARCH term) will be utilized in examining the volatility clustering behaviour of the volatility series.

3.3. Estimation Techniques and Procedure

The estimation technique used in this study is FGLS. However, before estimating the FGLS, the time series properties of the data were examined using the Augmented Dicker-Fuller (ADF) Unit root test and Phillip-Qualiaris cointegration tests. Error correction mechanism was also used to ascertain the adjustment mechanism in the short run. The estimation techniques and other analytical methods employed in this study are discussed below.

The World Development Indicators (WDI), World Economic Outlook (WEO) of the International Monetary Fund and the Central Bank of Nigeria (CBN) Statistical Bulletin were three of the sources of secondary time series data used in this study.It covered the period from 1981 to 2021.

4. Analysis and Presentation of Results

4.1 Time Series Properties of the Variables

In conducting empirical economics research, it is essential to evaluate the asymptotic and econometric properties of time series data.Complex patterns are often seen in time series data, including trends, seasonality, and stochastic components (Bierens, 1994; Wooldridge, 2012). To evaluate the stationarity of the variables in this study, a stationarity test was conducted using both an augmented Dicker Fuller (ADF) test and the Philip-Peron (PP) test.

Table 1: Summary of Unit Root Test

	ADF Test++		Philip-Perron Test ++		Assumptions
Variable	ADF statistics	Order of Integration	PP statistics	Order of Integration	
Fiscal policy (FIS)	-3.976**	I(0)	-3.633**	I(0)	No Trend
Monetary policy (mop)	-4.189***	I(0)	-4.104***	I(0)	No Trend
Trade balance (tb)	-6.837***	I(1)	-3.425**	I(1)	No Trend
Oil revenue (oilr)	-4.599	I(1)	-5.139***	I(1)	With Trend
Public debt growth (pdg)	-26.355***	I(1)	-25.872***	I(1)	With Trend
Economic growth (ECOG)	-5.463***	I(1)	-9.619***	I(1)	No Trend
Exchange rate (ER)	-8.671***	I(1)	-8.452***	I(1)	No Trend
Inflation rate (INF)	-7.428***	I(1)	-7.403***	I(1)	With Trend
Unemployment rate (UEP)	-4.929***	I(1)	-4.929***	I(1)	With Trend

	ADF Test++		Philip-Perron Test ++		Assumptions
Variable	ADF statistics	Order of Integration	PP statistics	Order of Integration	
Fiscal policy (FIS)	-3.976**	I(0)	-3.633**	I(0)	No Trend
Monetary policy (mop)	-4.189***	I(0)	-4.104***	I(0)	No Trend
Trade balance (tb)	-6.837***	I(1)	-3.425**	I(1)	No Trend
Oil revenue (oilr)	-4.599	I(1)	-5.139***	I(1)	With Trend
Public debt growth (pdg)	-26.355***	I(1)	-25.872***	I(1)	With Trend
Fiscal Deficit (DEF)	-4.278***	I(1)	-4.479***	I(1)	With Trend
Capital (K)	-5.891***	I(1)	-5.356***	I(1)	With Trend
Monetary policy rate (MPR)	-7.322***	I(1)	-7.083***	I(1)	With Trend
Money growth (MOG)	-6.887***	I(1)	-6.833***	I(1)	With Trend
Level of economic activity (ACT)	-8.127***	I(1)	-8.028***	I(1)	With Trend
Output gap (OUTG)	-6.198***	I(1)	-5.918***	I(1)	With Trend

Source: Estimated Using Eview 12

First, this finding shows that the series are integrated processes. Second, the integration at different levels suggests that there is a need for a cointegration test to ascertain whether all the variables are jointly integrated or not. The implications of these findings are significant for the subsequent analysis and interpretation of the data. The presence of integrated variables highlights the need for careful consideration of the appropriate modelling techniques.

(a) Cointegration Test

The analysis of co-integration plays a crucial role in understanding the long-term relationships among economic variables. Cointegration provides a framework for investigating the existence of equilibrium relationships that may persist even in the presence of short-term deviations. This concept is particularly relevant when examining economic time series data, where variables may exhibit stochastic trends and exhibit non-stationarity (Hayashi, 2000; Wooldridge, 2012).

Table 2: Summary of Cointegration Results

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*	Remark
H0: Series are not cointegrated					
Fiscal policy (FIS)	-49.456	0.000	-76.900	0.000	Cointegrated Equation
Monetary policy (mop)	-62.342	0.000	-44.831	0.000	Cointegrated Equation
Trade balance (tb)	-39.876	0.000	-63.393	0.000	Cointegrated Equation
Oil revenue (oilr)	-12.017	0.049	-32.677	0.001	Cointegrated Equation
Public debt growth (pdg)	-3.587	0.986	-15.875	0.996	Not Cointegrated Equation
Output gap (OUTG)	16.010	0.011	-42.202	0.000	Cointegrated Equation
Economic growth (ECOG)	-66.080	0.000	-55.033	0.000	Cointegrated Equation
Exchange rate volatility (EV)	-16.976	0.002	-49.018	0.000	Cointegrated Equation
Inflation rate (INF)	-41.550	0.000	-61.128	0.000	Cointegrated Equation
Unemployment rate (UEP)	-23.213	0.001	-52.653	0.000	Cointegrated Equation
Fiscal Deficit (DEF)	-48.009	0.000	-67.917	0.000	Cointegrated Equation
Economic Activity (ACT)	-32.934	0.000	-57.902	0.000	Cointegrated Equation
Capital (K)	-16.218	0.008	-45.628	0.000	Cointegrated Equation
Monetary policy rate (MPR)	-11.136	0.051	-39.005	0.001	Cointegrated Equation
Money growth (MOG)	-18.976	0.001	-52.018	0.000	Cointegrated Equation

**MacKinnon (1996) p-values. Warning: p-values may not be accurate for fewer than 35 observations.*

In this study, the cointegration test was conducted using the Philip-Oualiris (PO) technique. This technique is widely recognized and employed in empirical research due to its robustness and ability to capture complex relationships among variables. The use of PO in this study enhances the reliability of the results and enables a more comprehensive analysis of the cointegrating relationships. It also ensures that we obtain robust results even if the data suffers from structural breaks. The results obtained from the cointegration test indicate that there are 14 cointegrating equations present in the data. This finding suggests the existence of long-term relationships among the variables under investigation. Each cointegrating equation represents a linear combination of the variables that exhibits stability over time.The implications of these results are substantial for understanding the interconnections and interdependencies among the variables. The presence of cointegrating equations suggests that deviations from the equilibrium relationships will be corrected in the long run. This implies that shocks or disturbances affecting one variable will have a lasting impact on the other variables involved in the cointegrating relationship. To ascertain how the corrections of disequilibria are made in the short run, the error correction models are estimated in the next section.

4.2 Estimating Exchange Rate Volatility

Exchange rate volatility, a major concern for policymakers and investors, refers to sudden and significant spikes in the value of one currency relative to another. This volatility can occur within a very short period, causing upheaval in currency markets. Exchange rate volatility can also impact the profitability of foreign exchange trades. The degree of volatility is measured by the extent and frequency of these rate changes (Gao & Clark, 2019; Dogan & Bettendorf, 2020).

Table 3: ARCH-LM Test for Autoregressive Conditional Heteroscedasticity

Lags(*p*)	chi2	Df	Prob>chi2
H_0: No ARCH effects vs H_1: ARCH (*p*) disturbance			
1	32.917	1	0.0000

Source: Estimated by the researchers using Eview 12

To analyze the volatility and clustering patterns of exchange rates, we followed the approach proposed by Gao and Clark (2019) by employing the generalized autoregressive conditional heteroskedasticity (GARCH) method. Initially, we conducted tests to examine the presence of volatility clustering and ARCH effects in the nominal exchange rate series. To achieve this, we utilized the Lagrange Multiplier (LM) ARCH test. Assuming that the nominal exchange rate follows a basic first-order autoregressive (AR) process, denoted as AR(1), we estimated the regression of the mean equation and plotted the resulting residuals, as depicted in Figure 4.1.

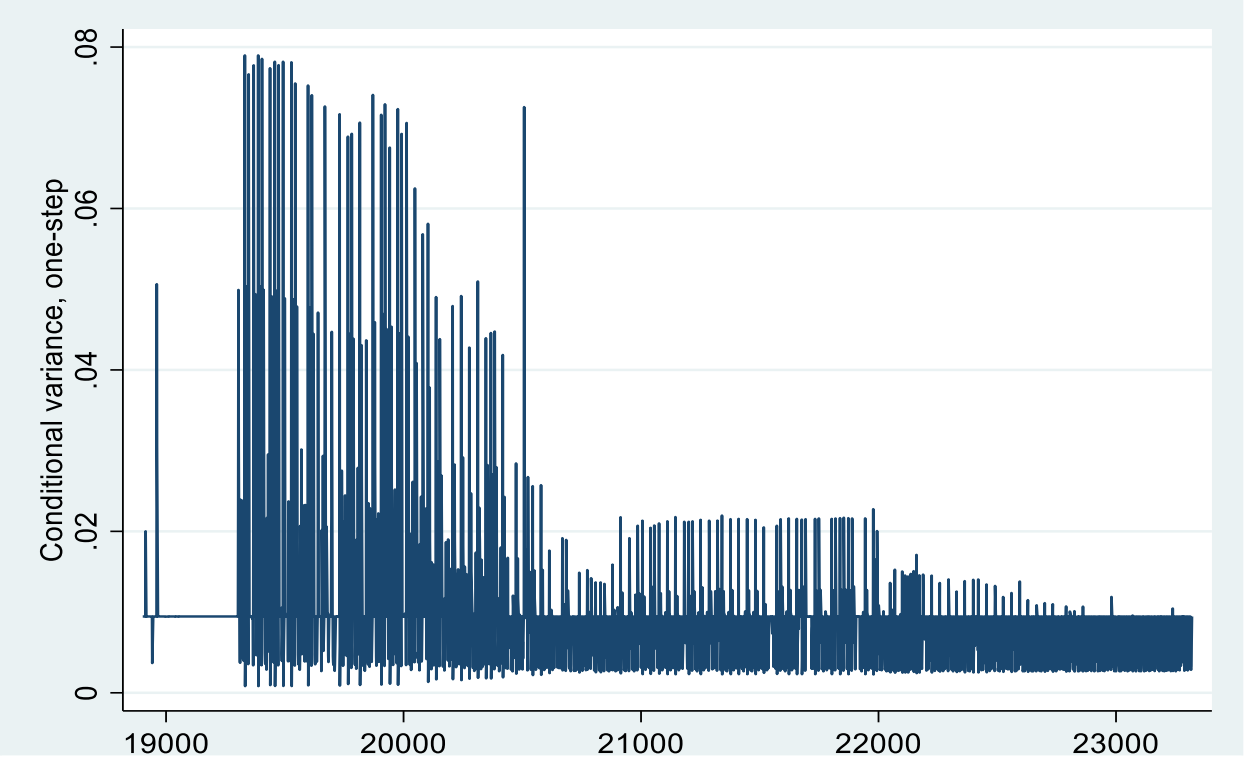

Figure 4.1: Residual of Mean equation of exchange rate
Source: Estimated by the researchers using Eview 12

A figure depicting volatility clustering is shown in Figure 4.1. It illustrates that extensive periods of high volatility usually follow periods of low volatility, and extended periods of low volatility frequently follow times of high volatility. An ARCH (Autoregressive Conditional Heteroscedasticity) and GARCH (Generalized Autoregressive Conditional Heteroscedasticity) model were used to effectively represent conditionally heteroscedastic characteristics in the residual or error in the model, as suggested by the clustering behaviour.

To determine whether our model exhibits ARCH effects, we conducted an ARCH-LM (Lagrange Multiplier test) by regressing the collected residuals from the mean equation of the exchange rate series on their respective lags. To reject the null hypothesis of no ARCH effect, the probability associated with the chi-square statistic must be equal to or less than 0.05. In our instance, the p-value of 0.000 and the chi-square value of 32.917 are less than the significance level of 0.05. The study concluded that the model does indeed show ARCH effects and reject the null hypothesis as a result.This implies that the mean equation of the exchange rate series demonstrates both volatility clustering and ARCH effects. This suggests that we can proceed to estimate the GARCH process.

The analysis of the results provided valuable insights into the GARCH and ARCH parameters and their implications for measuring volatility clustering. The combination of these parameters allows us to assess the degree of volatility persistence and clustering in a given financial market. The sum of the ARCH and GARCH parameters, known as the persistence parameter, plays a crucial role in determining the speed at which volatility reverts to its long-run average following a shock. A higher value of the persistence parameter indicates a greater level of volatility persistence and clustering, suggesting that shocks in the market has a long-lasting impact on future volatility.

Conversely, a lower value of the persistence parameter suggests that volatility dissipates more quickly after a shock, indicating a lesser degree of persistence and clustering.

When the persistence parameter is close to one, it signifies that volatility is highly persistent and clustered. This implies that shocks in the market have a long-lasting impact, leading to extended periods of high or low volatility. On the other hand, a value close to zero suggests weak persistence and clustering, indicating that shocks have a more transient effect on volatility. If the persistence parameter equals one, it suggests that volatility follows a random walk, meaning that shocks have no lasting impact on future volatility. However, if the persistence parameter exceeds one, it indicates an explosive volatility process, rendering the model unstable.

From the estimates obtained, the ARCH and GARCH parameters are 0.827 and 0.072 respectively. Each coefficient is statistically significant at a 5% level of significance. The sum of ARCH and GARCH is 0.899, which is close to but less than 1. This result indicates the presence of volatility persistence in the exchange rate market. It suggests that past volatility shocks have a lasting impact on future volatility levels. Consequently, periods of high volatility are likely to be followed by subsequent periods of elevated volatility, and vice versa.

Table 4: GARCH Model of Nominal Exchange Rate Volatility

Variable	Coefficient	Std. error	z-statistics	Prob
ER(-1)	0.205	0.0539	3.802	0.000
C	2.178	0.752	2.896	0.004
Conditional Variance				
ARCH (1)	0.827	0.203	4.078	0.000
GARCH (1)	0.072	0.023	3.109	0.002
C	0.828	0.101	8.201	0.000

Source: Estimated by the Researchers

4.3 Exchange Rate Volatility and Economic Growth

In this section, the outcomes obtained from the estimates of the impact of exchange rate volatility are presented and analyzed.

Table 5: Summary of Estimates of the Impact of Exchange Rate Volatility on Economic Growth

Explanatory Variables	**Baseline (OLS)**		**FGLS**	
	Coef.	Standarderror	Coef.	Standarderror
EV	0.164***	0.013	-0.180***	0.043
K	-0.755***	0.030	0.114***	0.044
MOP	-0.117***	0.005	-0.072***	0.020
FIP	0.178***	0.022	0.341***	0.125
TB	-0.187***	0.017	0.204***	0.069
OILR	0.140**	0.069	0.369***	0.077
C	1.604***	0.464	0.139**	0.056
R-squared	99.864		0.752	
F-statistic	120.998		122.230	
Obs	41		41.0000	

Source: Regression Estimates by the Researcher

However, when corrected for the violation of the OLS assumptions using FGLS, the estimates obtained show that the coefficient of EV is -0.180, indicating that one unit increase in exchange rate volatility will reduce economic growth by 0.18 units. This finding aligns with the economic apriori of a negative relationship. In the same vein, the coefficient of growth of capital stock is 0.03, indicating that one unit increase in capital stock will enhance economic growth by 0.030 unit. In addition, the coefficient of monetary policy (MOP) was -0.072. This indicates that one unit increase in MOP will reduce economic growth by 0.072. In other words, monetary tightening is anti-growth and could be a tool for moderating economic overheating. The coefficient of fiscal policy is 0.341. The positive and significant coefficient suggests that expansionary fiscal policy is pro-growth. That is, one unit increase in FIP will lead to 0.341 unit increase in growth. Other coefficients obtained include 0.204 for trade balance (TB) and 0.369 for oil revenue (OILR). These coefficients show that raising TB and OILR by one unit will lead to a 0.204 unit and 0.369 unit increase in economic growth.

Robustness Check

To ensure the robustness of the regression estimates obtained using FGLS, we conducted a thorough robustness check employing the bootstrap estimation method. The purpose of this check was to assess the stability and reliability of our findings by examining the statistical significance of biases obtained through bootstrapping. Bootstrap estimation is a resampling technique that allows us to create multiple simulated datasets by drawing samples with replacements from the original data. By repeatedly estimating the regression model on these simulated datasets, we obtain a distribution of parameter estimates. This distribution provides valuable insights into the variability and potential biases of our original estimate.

Upon conducting the bootstrap estimation, we found that the biases obtained from the bootstrap samples were not statistically significant. This implies that our original FGLS estimate is robust and not heavily influenced by outliers or specific data points. The lack of statistical significance in the biases suggests that our initial findings are reliable and not driven solely by chance.

Table 6: Summary of Bootstrapped Estimates

	Observed coefficient	Bias	Bootstrapped Std. Error	bias (p-value)
EV	-0.178	-0.0012	0.042	0.334
K	0.114	0.0005	0.043	0.238
MOP	-0.072	0.0004	0.021	0.333
FIP	0.339	0.0022	0.126	0.499
TB	0.204	-0.0005	0.070	0.625
OILR	0.368	0.0006	0.079	0.286

Source: Regression Estimates by the Researcher

Exchange Rate Volatility and Inflation

To evaluate the impact of exchange rate volatility on the inflation rate in Nigeria, both OLS and FGLS models were estimated.

Table 7: Summary of Impact of Exchange Rate Volatility on Inflation

	Baseline (OLS)		FGLS	
	Coef.	**Std. Err**	**Coef.**	**Std. Err**
EV	0.022	0.062	0.121***	0.025
MOG	-0.025***	0.002	0.066***	0.020
MPR	0.086***	0.004	-0.343***	0.072
DEF	-0.114***	0.003	0.054***	0.018
PDG	0.183***	0.003	0.115***	0.036
OUTG	0.027***	0.003	0.157***	0.048
OILR	0.011	0.007	0.132***	0.016
_cons	0.017***	0.005	1.071	1.086
R-squared	0.982		0.692	
F-statistic	32.312		63.002	
Obs	41		41.000	

Source: Regression Estimates by the Researcher

To correct for these inconsistencies, the FGLS estimation technique was employed. The estimates of the FGLS estimation obtained showed that the coefficient of exchange rate volatility is 0.121 with a standard error of 0.025, indicating that the coefficient is statistically significant at a 5% significant level. This suggests that a one-unit increase in exchange rate volatility will raise inflation rate by 0.121 units. In the same vein, the coefficient of MPR is -0.343. This indicates that raising the MPR by one unit will lower inflation by 0.34 units. The coefficient of money growth (MOG) and fiscal deficit (DEF) are 0.066 and 0.054 respectively. This suggests that raising the money supply and fiscal deficit each by 1 unit will raise inflation by 0.066 unit and 0.054 unit respectively. In addition, the coefficients of public debt growth (PDG) and output gap (OUTG) are 0.115 and 0.157 respectively.

Robustness Check

FGLS estimation method is commonly used to address the violation of OLS assumptions, especially heteroscedasticity and serial correlation problems. However, it has its assumptions and limitations. To ensure the robustness of the FGLS estimates, we incorporate bootstrap estimation techniques for conducting robustness checks. These checks help identify and address potential biases in empirical estimations by testing the sensitivity of results to different model specifications, estimation techniques, or assumptions. By resampling the data, the bootstrap method allows us to assess the variability in estimates and evaluate the robustness of the FGLS results. We examine the significance of any bias and determine if it deviates significantly from zero. If the bias is statistically significant, it suggests that the main estimation is biased or sensitive to specific data points, necessitating model re-evaluation or alternative specifications.

Comparing the standard error of the main estimation to the bootstrap estimation provides insights into robustness. Similar standard errors indicate robustness, while substantial deviations may indicate issues with the stability or reliability of the main model. Based on the results in Table 8, we find that the bootstrap bias is not statistically significant for all estimates, indicating that the FGLS estimates are reliable, consistent, and robust. This strengthens our confidence in the validity of the findings.

Table 8: Summary of Bootstrapped Estimates

	Observed coefficient	Bias	Bootstrapped Std. Error	bias (p-value)
EV	0.065	0.002	0.015	0.499
MOG	0.341	-0.001	0.061	0.357
MPR	-0.018	0.000	0.004	0.454
DEF	0.031	0.003	0.008	0.499
PDG	-0.061	-0.001	0.023	0.345
OUTG	0.085	0.003	0.032	0.263

Source: Regression Estimates by the Researcher

4.4 Exchange Rate Volatility and Unemployment

To evaluate the impact of exchange rate volatility on unemployment, a baseline regression (using OLS) and FGLS regression were carried out. The results obtained are presented and analyzed. The estimates obtained from the OLS are 0.007, 0.080, -0.012, -0.059, 0.043 and 0.123 for exchange rate volatility (EV), fiscal policy (FIP), output growth (Y), public debt growth (PDG), inflation (INF) and oil revenue (OILR) respectively. The OLS results indicate that the EV is not statistically significant at a 5% level of significance, and that the increase in government spending (FIP) is deflationary. These negative apriori expectations suggest that the estimation may be problematic.

To enhance the estimation robustness, the FGLS method was adopted. The estimates show that the coefficient of EV is 0.199, suggesting that a one-unit increase in exchange rate volatility could lead to a 0.199-unit increase in unemployment. FIP and ACT entered the model with negative coefficients namely, -0.312 and -0.261 respectively. This indicates that raising FIP and ACT by one unit will lead to a 0.312-unit and 0.261-unit decrease in unemployment respectively. The result also shows that the coefficients of public debt growth (PDG), inflation (INF) and oil revenue (OILR) are 0.030, 0.835 and -0.971. This suggests that one unit increase in PDG and INF will lead to a 0.030 unit and 0.835 unit increase in unemployment while one unit increase in OILR will lead to a 0.971 unit decline in unemployment.

Table 9: Summary of Estimates of the Impact of Exchange Rate Volatility on Unemployment

	Baseline		FGLS	
	Coef.	Std err	Coef.	Std err
EV	0.007*	0.004	0.199***	0.061
FIP	0.080***	0.006	-0.321**	0.140
ACT	0.012***	0.000	-0.261***	0.084
PDG	-0.059***	0.001	0.030***	0.005
INF	0.043***	0.003	0.835	0.547
OILR	0.123***	0.001	-0.971**	0.397
_cons	0.049***	0.004	0.137***	0.061
R-squared	0.988***		0.818	
F-statistic	87.028	0.000	161.072	
Obs	41		41	

Source: Regression Estimates by the Researcher

Robustness Check

To assess the reliability and robustness of the FGLS estimates, a robustness check was conducted using the bootstrap approach. By employing bootstrap methods, one can effectively identify potential biases and assess the sensitivity of the results to different model specifications, estimation techniques, and assumptions. The key principle of the bootstrap approach is to resample the data multiple times to create a distribution of estimates. This process allows us to evaluate the variability in the estimates, measure the robustness of the FGLS results, and detect any statistically significant biases that may be present.

After performing the bootstrap estimation, the obtained results are compared to the null hypothesis that the bootstrap bias is not statistically significant, using a significance level of 5%. The statistical analysis demonstrates that the null hypothesis cannot be rejected at the 5% significance level. This compelling evidence suggests that the FGLS estimates can be considered reliable, consistent, and robust in addressing the endogeneity concerns within the econometric model.

5. Conclusion and Recommendations

The study appraised the influence of exchange rate volatility on the macroeconomy in Nigeria. From the outcome obtained, the study concludes as follows. Exchange rate volatility has a negative impact on economic growth by hindering its prospects. Moreover, the study highlights that exchange rate volatility leads to higher levels of inflation, intensifying inflationary pressures. Additionally, the analysis reveals a positive correlation between exchange rate volatility and unemployment, implying that it contributes to higher unemployment rates. These results underscore the detrimental effects of exchange rate volatility on economic performance, inflation, and unemployment. Therefore, there is a critical need for effective policies to manage and stabilize exchange rates, aiming to foster sustainable economic growth, control inflation, and reduce unemployment.

Drawing from the previously discussed findings, we put out the subsequent policy proposals intended for decision-makers and stakeholders:

1. The study concluded thatexchange rate volatility has a significant negative impact on economic growth in Nigeria. To mitigate the adverse effects of currency rate fluctuations on economic growth, inflation, and joblessness, policymakers ought to concentrate on executing strategies that foster exchange rate stability. This can be accomplished by using measures like managed float or currency pegs, which are intended to lessen exchange rate volatility and foster an atmosphere that is conducive to economic stability. Policymakers can lessen the negative consequences of exchange rate swings and support long-term economic growth by giving these policies top priority.

2. To reduce the economy's vulnerability to exchange rate volatility, policymakers should prioritize programs that promote economic diversification. This may entail encouraging the expansion and development of non-oil sectors, decreasing dependency on oil earnings, and limiting the impact of changes in oil prices on exchange rates and the stability of the economy as a whole. By putting policies in place to promote economic diversity, one may lessen the risks brought on by exchange rate volatility and strengthen and stabilize the economy.

3. The study concluded that exchange rate volatility has a significant positive impact on inflation in Nigeria. With exchange rate volatility creating inflationary pressures, policymakers should concentrate on stepping up their efforts to control inflation. To reduce the influence of exchange rate changes on inflation levels, this may entail using monetary policy measures such as controlling liquidity, adjusting interest rates, and putting in place focused interventions. Policymakers can effectively tackle the issues caused by exchange rate volatility and guarantee improved control over inflation by improving these measures.

4. It is therefore concluded that exchange rate volatility has a significant positive impact on unemployment in Nigeria. Improving the labour market's flexibility is necessary to address the connection between exchange rate volatility and unemployment. It is recommended that policymakers explore measures aimed at promoting job creation, facilitating skill development, and enacting changes that improve employment chances in general, especially during periods of exchange rate volatility. Policymakers can tackle the difficulties caused by fluctuations in exchange rates and foster a workforce that is more flexible and resilient by placing a higher priority on labour market flexibility.

References

Adzugbele, A.S., Eze, A.A., Morba, E. & Nwokocha, N.I. (2020). Exchange rate and unemployment in Nigeria: An ARDL approach. *Academic Journal of Economic Studies*, 6(3), 53-58

Akinwolere, B.C. (2021). The impact of exchange rate volatility on economic growth in Nigeria: A dynamic econometric approach. *African Journal of Business and Economic Development*, 1(5), 16-39

Akpan, B.L., & Udo, A.B. (2023). Exchange rate and inflation rate nexus: The Nigerian experience. *Journal of Economics and Sustainable Development*, 14(10), 11-23

Ani, E.C., Joel, E., &Baajon, M.A. (2019). Exchange rate and unemployment in Nigeria: An analysis. *International Journal of Family Business and Management*, 3(2), 1-7

Atya, E.M. (2017). The effect of real exchange rate on unemployment: Evidence from Egypt. *Arab Journal of Administration*, 37(4), 251-262

Bierens, H. J. (1994). Topics in advanced econometrics: estimation, testing, and specification of cross-section and time series models. Cambridge: Cambridge University Press.

Cahyadin, M., &Ratwianingsih, L. (2020). External debt, exchange rate and unemployment in selected ASEAN countries. *JurnalEkonomi&Studi Pembangunan*, 21(1), 16-36

Çitçi, S.H., & Kaya, H. (2023). Exchange rate uncertainty and the connectedness of inflation. *Borsa Istanbul Review*, 23(3), 723-735.

Dogan, A., & Bettendorf, T. (2020). Revisiting real exchange rate volatility: non-traded goods and cointegrated TFP shocks. *Oxford Economic Papers,* 72(1), 80-1002

Emenike, K.O. (2016). Comparative analysis of bureaux de change and official exchange rates volatility in Nigeria. *Intellectual Economics*, 10(1), 28-37.

Fofanah, P. (2021). Effects of exchange rate volatility on economic growth: Evidence from West African monetary zone WAMZ countries. *International Journal of Scientific Research and Management (IJSRM)*, 09(01), 508-535

Gao, T., & Clark, E. (2019). Exchange rate volatility and trade: The role of credit constraints and productivity. *International Journal of Finance & Economics*, 27(1), 1419-14423

Goshit, G.G., &Terese, U. (2020). Analyzing the effect of selected macroeconomic variables on economic growth in Nigeria. *Journal of Public Affairs*, 1-10

Hayashi, F. (2000). Econometrics. New Jersey: Princeton University Press

Husaini, D. H., & Lean, H.H. (2021). Asymmetric impact of oil price and exchange rate on disaggregation price inflation. *Resources Policy*, 73, 102-115.

Ighoroje, J.S., &Orife, C.O. (2022). Exchange rate fluctuations and inflation rate in Nigeria: 1987 To 2019. *International Journal of Business and Management Invention (IJBMI)*, 11(5), 01-08

Imoagwu, C.P., Umunna, G.N., Okaforocha, C.M., Ugwunna, O.T. & Eze, A.E. (2023). Does trade liberalization improve unemployment rate in Nigeria: Evidence from recent DATA. *International Journal of Advanced Economics*, 5(7), 199-214

Inyiama, O.I., &Ekwe, M.C. (2014). Exchange rate and inflationary rate: Do they interact? Evidence from Nigeria. *International Journal of Economics and Finance*, 6(3), 80-87

Iqbal, J., Mahmood, F., Nosheen, M., &Wohar, M. (2022). The asymmetric impact of exchange rate misalignment on economic growth of India: An application of Hodrick–Prescott filter technique. *Economic Analysis and Policy*. Accessed from https://doi.org/10.1016/j.eap.2022.12.022. Accessed date: 18 September, 2022

Isah, K. O., &Ekeocha, P. (2023). Modelling exchange rate volatility in turbulent periods: The role of oil prices in Nigeria. *Scientific African*, 19, 1-15

Izilein, E.I., Chukwuma, O.T. & Odjegba, O.P. (2014). An empirical analysis of the determinants of exchange rate variations in Nigeria. *Journal of Pristine*, 10(1).

Jayathilaka, R., Rathnayake, R., Jayathilake, B., Dharmasena, T., Bodinayake, D., & Kathriarachchi, D. (2022). Exploring the growth direction: the impact of exchange rate and purchasing managers index on economic growth in Sri Lanka. *Quality & Quantity*. Accessed from https://doi.org/10.1007/s11135-022-01490-x. Accessed date: 25 October, 2022

Jeelani, S. (2016). Exchange rate volatility and its impact on unemployment in India. Accessed from https://www.aimsjournal.org/uploads/78/6302_pdf.pdf. Accessed date: 15 October, 2022

Maku, O.A., Ishioro, B.O., &Asagba, V.E. (2023). Exchange rates and macroeconomic fundamentals in a small commodity export-dependent economy.*Innovations*, 72, 361-369

Mankiw, N.G., Romer, D., & Weil, D.N. (1992). A contribution to the empirics of economic growth.*Quarterly Journal of Economics*, 107, 407-437

Musa, N. (2021). Impact of exchange rate volatility on inflation in Nigeria.*Journal of Contemporary Research in Business, Economics and Finance*, 3(1), 26-38.

National Bureau of Statistics (2020). Labor force statistics: Unemployment and underemployment report (Q4 2020). Abuja: NBS

Nwankwo, C.A., &Ifejiofor, A.P. (2014). Impact of unemployment on Nigerian economic development: a study of selected local government area in Anambra State, Nigeria. *European Journal of Business and Management*, 6(35), 103-112

Nwokoye, E., Igbanugo, C., Mukaosolu, M., &Dimnwobi, S. (2019). Joblessness in the midst of riches: What factors reinforce the resource-curse syndrome in Nigeria? *International Journal of Social Science & Economic Research*, 4(3), 1787-1805.

Olamide, E., Ogujiuba, K., &Maredza, A. (2022). Exchange rate volatility, inflation and economic growth in developing countries: Panel data approach for SADC. *Economies*, 10, 67-77

Olubusoye, O.E., Salisu, A.A. &Olofin, S.O. (2022). Youth unemployment in Nigeria: nature, causes and solutions. *Quality and Quantity*. Accessed fromhttps://doi.org/10.1007/s11135-022-01388-8. Accessed date: 10 December, 2022

Raifu, I. A. (2019). The effect of financial development on unemployment in Nigeria: Do measures of financial development matter? *DBN Journal of Economics and Sustainable Growth*, 2(2), 1-35.

Raifu, I.A., &Abodunde, T.T. (2020). Does unemployment still follow hysteresis hypothesis in Nigeria? Evidence from linear and nonlinear unit root test methods. *Journal of International Cooperation and Development*, 3(1), 79-94

Ramoni-Perazzi, J., & Romero, H. (2022). Exchange rate volatility, corruption, and economic growth. *Heliyon*, 8(12), 12-28.

Sala-I-Martin, X., Doppelhofer, G. & Miller, R. (2014). Determinants of long-term growth: A Bayesian averaging of classical estimates (BACE) approach. *American Economic Review*,104(4), 813-835.

Shaik, K., & Gona, B. R. (2020). Exchange rate and the economic growth in India: An empirical analysis. *Journal of Public Affairs*, 21(2), 1-9

Tekin, R. (2017). Economic growth, exports and foreign direct investment in least developed countries: A panel Granger causality analysis. *Economic Modelling*, 29, 868-878

Ugwunna, O.T., Ezeanyeji, C.S., Nwabunwanne, A.C., Onwe, C.M. (2024). Capital flight and economic growth in Nigeria: An ARDL approach. *International Journal of Advanced Economics*, 6(12), 798-812

Ugwunna, O.T. & Obi, K.O. (2023). Determinants of economic growth in sub-Saharan Africa. *GVU Journal of Managment and Social Science Research*, 8, 25-37

Valogo, M. K., Duodu, E., Yusif, H., & Baidoo, S. T. (2023). Effect of exchange rate on inflation in the inflation targeting framework: Is the threshold level relevant? *Research in Globalization*, 6, 1-15

Wooldridge, J. M. (2012). Introductory econometrics: A modern approach. Ohio: South-Western Cengage Learning.

World Bank (2022). *World development indicators*. Washington DC: World Bank