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The Impact of Exchange Rate Fluctuation on Economic Growth in Nigeria (1986-2023)

Tijani Ayo Moses (corresponding author)
University of Lagos, Akoka-Yaba, Lagos Nigeria. Faculty of Social Science, Department of Economics. Email: tijaniayo2all@gmail.com

Abstract
The study examined the impact of exchange rate fluctuation on economic growth in Nigeria from 1986 to 2023. The stationarity test confirmed that all the data employed in the study were not stationary at levels but became stationary after the first differencing. Furthermore, the results showed a long-term relationship between real gross domestic product (RGDP), exchange rate (EXR), foreign direct investment (FDI), trade openness (TO), public expenditure (PEX), and interest rate (INT) in Nigeria during the study period. This confirmed a long-run relationship between exchange rate fluctuation and economic growth in Nigeria. The Granger causality test revealed a unidirectional causality between exchange rate (EXR), and real gross domestic product (RGDP), where causality ran from exchange rate fluctuation to foreign direct investment (FDI) without feedback. Additionally, the empirical analysis from the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model indicated that exchange rate fluctuation negatively and significantly impacted RGDP. Moreover, foreign direct investment (FDI) and trade openness (TO) had a positive and significant influence on RGDP in Nigeria during the study period. Based on these findings, the study concluded that exchange rate fluctuation negatively and significantly affected foreign direct investment in Nigeria. Consequently, the study recommended that monetary authorities harmonize the exchange rate system to promote stability. Furthermore, given the unidirectional effect of exchange rate fluctuation, the government should adopt stabilizing macroeconomic policies to mitigate its negative impact on the economy.
Keywords: Economic Growth, Exchange Rate Fluctuations, Fixed Exchange Rate, Floating Exchange Rate, Structural Adjustment Programme
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INTRODUCTION

Economic growth is the persisit increase productivities leading to increase in output of goods and services of a in a country over time (Jhingan, 2005, 2012; Adeaga, 2016; Aliyu, 2019). it is the key to measure standard of living and reducing income inequality (Popoola, Asaleye & Eluyela, 2018). Growth shows up when savings grow, money gets invested, and production becomes more efficient - then goods pile up and people benefit.

The exchange rate is an important area of macroeconomics because it reflects the value of domestic currency in relation to foreign currencies, which in turned affect the internal and external balance of payment (Oladipupo & Onotaniyohuwa, 2018). Nigeria has wrestled with setting proper exchange rates over time, especially since shifting back and forth from rigid attachments to specific values to loose floating setups after deep reforms kicked in. AFEM, IFEM, RDAS, WDAS, and the increased role of the Bureau-de-Change, underscore persistent policy reversals and uncertainty (Amoo et al., 2014; Aliyu, 2019; CBN, 2018). These challenges have been inflamed by oil price changes and high import dependence.

When exchange rates shift, especially in freely floating systems, pressures show up in many parts of an economy - prices react, production changes, trade flows adjust, jobs respond, and spending decisions evolve (Stockman, 2009; Adeusi & Aluko, 2015). due to this, picking an appropriate exchange rate strategy becomes important among policymakers, particularly in nations such as Nigeria, where money markets stay underdeveloped (Klein & Shambaugh, 2010; Calvo & Reinhart, 2016). Nigeria's economic experience since independence has been characterised by instability arising from political, structural, and policy-related factors, including overdependence on oil revenues (Adegboyega, 2018; Popoola et al., 2018). Although oil boom revenues initially strengthened foreign exchange earnings, the subsequent decline in the sector's performance prompted several monetary, fiscal, and exchange rate reforms aimed at diversification. However, many of these policies have not yielded the desired growth outcomes (Obadiaru et al., 2018; Oladipo et al., 2019).

Statement of the Problem

One moment it seems clear - currency swings boost exports - but then doubt creeps in. Some argue flexible exchange rates actually scare away outside money, sending flows underground. Models like Mundell's show promise, linking lower values to stronger output, at least on paper. Yet real-world numbers often muddle the picture, sometimes linking movement to slower growth instead. Scholars keep returning, hoping to untangle which story holds weight, if either. Even the most trusted models waver when tested across different economies and time spans. So answers stay thin, leaving much unanswered despite efforts to pin it down. 2014).

Even after repeated changes in Nigeria's exchange rates, the economy has grown only slightly, held back by shaky policies, reliance on oil, and weak shifts into other sectors. What also misses the mark is how past research fails to deeply explore whether swings in the exchange rate actually influence long-term output - or if growth drives those shifts instead. It is these unanswered questions that lead straight into testing what happens, how things connect over time, and where cause meets effect between currency movements and Nigeria's financial progress.

In addition, studies established that exchange rate fluctuation to a large extent affects economic growth negatively and/or positively, but failed to check if this persisted into the long-run. They also failed to establish the direction of causality between exchange rate fluctuation and economic growth. The questions that come to mind are; does exchange rate fluctuation actually impact economic growth in Nigeria? Can longrun relationship between exchange rate fluctuation and economic growth be established in Nigeria? And can we ascertain causal effect between exchange rate fluctuation and economic growth in Nigeria? These gaps in literatures served as a basis for this study. This study tests the following set of null hypotheses. The alternative hypotheses are implied.

H_{01}: Exchange rate fluctuation does not have significant effect on real GDP growth in Nigeria.

H_{02}: Foreign direct investment does not have significant effect on real GDP growth in Nigeria.

H_{03}: Government expenditure does not have a significant effect on real GDP growth in Nigeria.

H_{04}: Trade openness does not have a significant effect on real GDP growth in Nigeria.

LITERATURE REVIEW

Overview of the Nigerian Exchange Regime

The real exchange rate and its impact on macroeconomic development continue to attract attention from multiple parties, including policy-makers, scholars, and development professionals, particularly in the developing and purchase-dependent nations like Nigeria. In these environments, policymakers follow different exchange rate regimes and regulations to mitigate imbalance and minimize volatility as often as plausible (Velasco, 1999), intending to create a conducive atmosphere to macroeconomic improvement and market development. Since the institution of the Bretton Woods in 1947, the Nigerian government has implemented different exchange-rate regimes. Table 2.1 below shows the different exchange-rate regimes practiced by Nigeria and their related outcomes from 1957 to date.

With the 1958 creation of the Central Bank of Nigeria (CBN), as a benchmark for foreign settlement, the pound sterling had also been implemented as the legal tender comparable to the gold. The CBN managed a fixed-exchange-rate regime throughout this time, with a US dollar representing the gold (Ajakaiye and Ojowu, 1994). The crisis of the early 1970s that negatively hit the Bretton Woods system, where it greatly contributed to the fall in the value of the US currency and other foreign currencies, was a significant development throughout this period. Despite the crisis, the Nigerian pound appreciated from NP/US$2.80 throughout 1971 to NP/US$3.80 in 1973. The tremendous inflow of foreign money from the first oil boom of 1973 resulted from this Nigerian Pound appreciation.

Table 1.1: Transitional Process of the Nigerian Exchange Rate Regime

Exchange Rate Regime	Year	Transformations	Results
Fixed	1957-1973	*Nigerian Pound *Oil Boom *No devaluation	Nigerian Pound appreciated
Fixed	1974-1985	*Introduction of Naira *Currency devaluation *Import licenses and exchange control reform	Nigerian Deppreciated
Flexible	1986-2014	*Financial liberalization *Bidding and forex auction *CBN Interventions	Nigerian Continues Deppreciation
Float	2014 to date	*Intentional CBN intervention and control measures *Realignment of the Naira *BDC reforms	Stable inter Bank rate with wider BDC rate

Source: Author's Compilation (2026)

However, the period 1973 through 1985 witnessed another turning point in the foreign exchange process of Nigeria because the naira substituted the Nigerian pound by 1973. This era was dominated by enormous pressure on the naira to depreciate. That pressure arose from the assertion that, in relation to the anchor currency, the naira was overpriced. Following that, it devalued the naira to N0.66 / US$1 exchange rate.

Fortunately, it documented a barely noticeable appreciation of 0.2 percent to N0.62 / US$1 through 1974, before regulating between 1975 and 1979 by 0.1 percent to an average of N0.64 / US$1 due to a decrease in crude oil prices. As export earnings rose after enhanced oil prices, in 1980, the naira rose to N0.55 / US$1 prior to losing value by 2.9 percent and 14.6 percent to N0.74 and N0.89 / US$1 through 1983 and 1985, respectively. Throughout 1986, to deregulate the economy and remove disruptors that severely hampered viable growth, the Nigerian government formed the Structural Adjustment Program (SAP). The 1986 implementation of a flexible exchange-rate regime by the CBN was a critical feature of SAP (Nnanna, 2002; Adeoye and Atanda, 2012). Under SAP, numerous versions of flexible exchange rates occurred, reflecting the different reforms of forex market liberalization. The first one was launched in 1986 of the Second-Tier Foreign Exchange Market (SFEM). This was accompanied by the 1987 Foreign Exchange Market (FEM), the 1988 Interbank Foreign Exchange Market (IFEM), the 1995 Independent Foreign Exchange Market (AFEM), the 1999 IFEM, and the 2002 Dutch Auction System (DAS). The foreign exchange demand increased significantly following the two tiers merger via the FEM, leading to a gradual Naira devaluation.

The emergence of the IFEM made it possible for banks to start trading in foreign currency with one another. Conversely, the exchange rate registered a loss in value of 55.9 percent from N0.89 through 1985 to N2.02 by 1986 and N7.65 / US$ by ending 1990. Increased dollar demand led to a further devaluation of N22.69 / US$ in 1993 under that same FEM before becoming relatively stable at an average of N21.88 / US$ by 1994 to 1998 (Danmola, 2013). Consequently, a drop in oil prices throughout the late 1990s, combined with the banking system's excess funds and a sustained fiscal deficit, led to a 76 percent devaluation of the naira from N21.88 / US$1 as of 1998 to the corresponding N92.69 / US$ by 1999. The economic recession of 1997–1999 contributed

to yet more devaluation of the naira to N116.12 / US$ throughout 2002. In the year 1999-2002, however, fluctuations in the parallel market price were partially mediated due to CBN interventions. The CBN formed the rDAS in 2002 as part of an attempt to rebalance the rate of exchange and eventually adopted the wDAS by 2005. That being said, the 2007 global financial crisis, which also followed a reduction in the value of crude oil, spurred to a further devaluation of the naira from N149.58 / US$ as of 2009 to N158.27 / US$ by 2011. As part of strategic approaches to managing the financial crisis, the reinstatement of the rDAS by 2012 contributed to a further devaluation of the naira to N180 / US$ by October 2014 supposed to follow oil-price volatility. Since that time, the exchange rate has seen a constant devaluation. The unstable price of oil in the global market can be identified as the main cause of fluctuation in the Naira exchange rate. This would be the direct consequence of a unitary economy largely dependent on revenues from crude oil.

Economic Growth in Nigeria

Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time (Asogwa, Okechukwu and Onyekwelu, 2018). According to Kuznets (1973) a country's economic growth may be defined as a long-term rise in capacity to supply increasingly diverse economic goods to its population. This growing capacity based on advancing technology and the institutional and ideological adjustments that it demands. The definition by Kuznets (1973) suits the study as it seeks to provide policy recommendation to the government on how to diversify the economy and to provide different economic goods and employment opportunity to the citizens rather than depending on the oil sector for the sustenance of the economy. Economic growth also, is the increases in goods and service produced in a country over time and its effect on the standard of living of the citizen.

Exchange Rate Fluctuations and Economic Growth

Exchange rate fluctuations and exchange rate uncertainty appear to be important factors investors take into consideration in their decision to invest abroad. Much of the literature on exchange rate fluctuations and economic growth concentrates on two issues: the level of the exchange rate and the fluctuations of the exchange rate. Froot and Stein (1991) claimed that the level of exchange rate may influence economic growth. This is because depreciation of the host country currency against the home currency increases the relative wealth of foreigners thereby increasing the attractiveness of the host country for foreign direct investment as firms are able to acquire assets in the host country relatively cheaply. Thus a depreciation of the host currency should increase FDI into the host country, and conversely an appreciation of the host currency should decrease FDI and concequently economic growth.

Against this argument, it is often claimed that the price of assets should not matter but only their rate of return. When the host country currency depreciates relative to the home country currency, not only the price, but also nominal return of the assets in the host country currency goes down. Since the prices of assets and returns on assets both go down exchange rate movements should not affect economic growth.

Froot and Stein (1991) counter this argument with the claim that when capital markets are subject to information imperfections, exchange rate fluctuations do influence foreign investment and economic growth. Information asymmetry causes a divergence between internal and external financing, making the latter more expensive than the former, since the lenders incur monitoring costs and thus lend less than the full value of the asset. In this environment should foreign investors hold their wealth in foreign currency, the depreciation of the local currency will increase the wealth position of foreign agents relative to domestic agents, thus leading foreign investors to bid more aggressively for domestic assets and as a result, there would be growth in the gross domestic product of the country. Froot and Stein (1991) use industry level data on US inward FDI for the 1970s and 1980s to support their hypothesis (Jayaratnam, 2003).

Campa (1993), however, puts forward a different argument for the relationship between exchange rate level, foreign direct investment and real GDP. In his model, the firm's decision whether or not to invest abroad depends on the expectations of future profitability. In such a case, the higher the level of the exchange rate (measured in units of foreign currency per host currency) and the more it is rising, the higher will be expectations of future profits from entering a foreign market. Therefore, Campa's model predicts that an appreciation of the host currency will increase FDI into the host country, ceteris paribus, and boost the real GDP of the country and this is contrary to the prediction of Froot and Stein (1991). His empirical results analyzing the number of foreign entrants entering the US provide evidence to support his model (Gorg and Wakelin 2001).

Empirical Review

Akpokodje and Omojimite (2024) carried out a similar study on the volume of imports of the countries within the Economic Community of West African States (ECOWAS) by using GARGH model to generate the volatility series. They concluded that volatility poses a significant negative effect on imports of the countries within the region. Also, the outcome of the sub-group of non-continental free trade area countries of which Ghana is a part of showed that exchange rate volatility impacts imports positively.

Senadza and Diaba (2024) applied the dynamic heterogeneous panel data's pooled group-mean estimator as the method of estimation for 11 selected economies in Sub-Saharan African which includes Ghana and covers the period from 1993 to 2021 and by applying the GARCH and EGARCH to proxy exchange rate volatility, and their study concludes insignificant exchange rate volatility impact on imports and, however, finds a negative impact on export under the short-run dynamics. However, the effect was positive in the long-run.

Osei-Assibey (2024) uses an augmented gravity specification on the trade–exchange volatility nexus of Ghana and its trade partners (the USA, the UK, EU-12, China, India, Japan and Nigeria), and the study determined that in the absence of hedging facilities, the volatility of exchange rate has a significant positive effect on Ghanaian exports but with an inverse (insignificant) impact on imports to Ghana. On total trade, however, the impact was positive yet statistically insignificant.

Joshua, Oladipo and Umozurike (2023) investigated the impact of exchange rate volatility on economic growth in Nigeria spanning 1981 to 2020. Annual Secondary data used were sourced from the World Bank, Central Bank of Nigeria Statistical Bulletin of various issues. The study employed the ARCH/GARCH model in measuring volatility and ARDL estimation technique. The findings revealed that in the long run, exchange rate volatility has a negative coefficient while the exchange rate has a positive coefficient but is not statistically coefficient. However, in the short-run, the effect of exchange rate volatility was positive and statistically significant at one percent and the effect of exchange is negative and statistically significant at one percent. The study recommends that the Central Bank of Nigeria should sustain the current fluctuation of the exchange rate in Nigeria for the sustenance of the positive short-run effect on Nigerian real GDP per capita growth and continue with the managed float exchange rate system which is already in place. Policies that will improve production and discourage importation should be encouraged to move the economy from consumption to production economy.

Yakub et al. (2019) examine the influence of exchange-rate fluctuations on economic growth in Nigeria through GARCH and ARDL bound technique of cointegration and observed a negative effect in the short term, but no clear effects in the long term. Similarly, Nsofor et al. (2017) investigated the impact of exchange-rate fluctuations using GARCH and GMM on Nigeria's output growth and, like most others, observed that the uncertainty and FDI had a major adverse effect on such growth output.

Chowdhury (2019) explored real and nominal foreign exchange volatility effects on exports. Using a flexible slack form of the Goldstein-Khan two-country imperfect substitute's model for bilateral trade, the study identifies the general effect into both timings just as a side impact. The result shows that the size impact of forecasted foreign exchange volatility doesn't vary according to the measure utilized in terms of magnitude and direction. Be that as it may, there are altogether different timing effects, when contrasted with real and nominal foreign exchange rate volatility.

Aghin et al (2019) in their study also found that the effect of exchange rate volatility, which is the aftermath of how well the economy is managed on real activity is relatively small and insignificant. This is in resonance with the findings of Dubas and Lee (2015), which both discovered a robust relationship between exchange rate stability and growth. Moreover, the result suggests that membership of the (South) Eastern and Central European countries in the European Monetary Union would have a positive impact on these countries' growth rates

Phiri (2018) examined the standard assertion of a linear association between exchange-rate fluctuations and smooth transition regression (STR) in South-Africa and established a non-linear association between exchange-rate fluctuations and economic growth. The study indicated, indeed, that the Reserve Bank of South Africa regime-shifting conduct is encouraged by the size of government, but that exchange-rate uncertainty has a major impact on economic growth, particularly when government spending growth is below 6%. However, the result revealed that the degree to which exchange-rate fluctuations will influence economic growth depends completely on how fiscal authorities react to global economic shocks.

Barrett (2018) undertook an observational audit of the effect of exchange rate volatility on international trade flows by studying the instance of Taiwan's exports to the United States from 1989-2016. In particular, they utilize sectoral level, monthly data and an innovative multivariate GARCH-M estimator with corrections for leptokurtic blunders. This estimator takes into account the possibility that traders' forward-looking contracting conduct might condition the manner by which exchange rate movement are associated.

Rodrik (2018) was of the opinion that real undervaluation promotes economic growth, increases the profitability of the tradable sector, and leads to an enlargement of the share of tradable in domestic value added. He stated that the tradable sector in developing countries can be too small because it suffers more than the non-tradable sector from institutional weaknesses and market failures. A real exchange rate undervaluation works as a second-best policy to compensate for the negative effects of this misinterpretation by enhancing the sector's profitability. Higher profitability promotes investment in the tradable sector, which then expands, and promotes economic growth.

Obeng (2017) with the Autoregressive Distributed Lag (ARDL) co-integration analysis approach looked at the impacts of exchange-rate fluctuations on non - conventional exports in Ghana. Such a study showed that exchange-rate fluctuations had damaging consequences on Ghana's non - conventional exports, the consequences become more prominent in the longer term than in the shorter term.

Boug and Fagereng (2017) construct a measure of exchange rate volatility using the GARCH model, to explore sectoral causality between export performance and exchange rate variations in Norway. This was for the quarterly time series period of 1985:1 to 2015:4. They used the Johansen Cointegration Vector Auto Regression (VAR) method to estimate a model where exports depend on exports competitiveness, foreign demand and exchange rate volatility. Their results indicated a weak causality of exchange rate variations to exports performance.

Obansa et al (2017) also investigated the relationship between exchange rate and economic growth in Nigeria between the years 1970–2016. The result stipulated that exchange rate has a strong impact on economic growth. They established that exchange rate liberalization was good to the Nigerian economy as it promotes economic growth.

Dickson and Ukavwe (2017) also applied the error correction and GARCH model to investigate the impact of exchange rate fluctuations on trade variations in Nigeria using annual time series data from 1970 to 2010. The results of the study showed that exchange rate volatility is not significant in explaining variations in import, but was found to be statistically significant and positive in accounting for variations in export.

Ettah, *et. al* (2016) studies effects of price and exchange rate fluctuations Agricultural exports in Nigeria. They observed that exchange rate fluctuations and Agricultural credits positively affect cocoa exports in Nigeria. They also revealed that relative prices of cocoa are insignificantly related to quantity of export, however, it has a negative sign which is in line with a priori expectation. Also implies volatility on cocoa export in Nigeria.

Asher (2016) analyzed the impact of exchange rate fluctuation on the Nigerian economic growth for period of 1980 – 2015. The result revealed that real exchange rate has a positive effect on the economic growth. He opines that exchange rate is used to determine the level of output growth of the country. However, with already existing exchange rate policies, a constant exchange rate has been uncertainty in the trade transaction. This has resulted to declines in standard of living of the population increase in costs of production which resulted in cost-push inflation.

Aderibugbe (2015) affirmed that appreciation of exchange rate brings about increased imports and reduced exports while depreciation would expand export and discourage import. Also, depreciation of exchange rate is likely to cause a shift from foreign goods to domestic goods. Thus, it leads to diversion of income from importing countries to countries exporting through a shift in terms of trade, and this tends to have impact on the exporting and importing countries' economic growth.

Oladipupo & Onotaniyohuwo (2015) in their view, exchange rate has a significant impact on the balance of payments position. The exchange rate depreciation can actually lead to improved balance of payments position if fiscal discipline is imposed. They also found out that improper allocation and misuse of domestic credit, fiscal indiscipline, and lack of appropriate expenditure control policies due to centralization of power in government are some of the causes of persistent balance of payments deficits in Nigeria.

Rano-Aliyu (2014), carried out a study in Nigeria, and he discovered that the appreciation of exchange rate exercise positively impacts on real economic growth in Nigeria. Although the appreciation of the exchange rate will lead to a loss of competitiveness, since the economy primarily does not have the capacity to appropriate gains through competitiveness it is therefore more gratifying when the currency appreciate than when it depreciates. This is due to the fact that appreciation will dampen inflation, boost domestic investment, savings and enhance the standard of living.

Adebiyi and Dauda (2014) with the use of error correction model disputed on the contrary, that trade liberalization promoted growth in the Nigerian industrial sector and stabilized the exchange rate market between 1970 and 2006. To them, there was a positive and significant relationship between index of industrial production and real export. A one per cent rise in real export increases the index of industrial production by 12.2 per cent. By inference, it means that the policy of deregulation influenced positively on export through exchange rate depreciation.

Ubok-udom (2013) analyzed the issues surrounding the implementation of SAP in Nigeria, and drew up a deduction that the peculiar features of Nigerian economy limits the efficacy of currency depreciation in producing desirable effects. From the study of the relationship between exchange rate variation and growth of the domestic output in Nigeria (1981-2011); he expressed growth of domestic output as a linear function of variations in the average nominal exchange rate. In addition, he used dummy variables to capture the periods of currency depreciation. The empirical result revealed that all coefficients of the major explanatory variables have negative signs.

Ghura and Greenes (2013) also employed panel data in their investigation on the impact of exchange rate misalignment and volatility on the trade flows of sub-Saharan African countries during the period from 1982 to 2012. Exchange rate volatility, measured by the coefficient of variation of real exchange rate was found to have significant and negative impact on trade flows. This analysis covered the fixed exchange period only, thus limiting the utility of the findings.

Dada & Oyeranti (2012) observes that there is no evidence of a strong direct relationship between changes in the exchange rate and GDP growth. Rather, Nigeria's economic growth has been directly affected by fiscal and monetary policies and other economic variables particularly the growth of exports (Oil). These factors have tended to sustain a pattern of real exchange rate management are necessary but not adequate to revive the Nigerian economy.

Joseph (2011) used the GARCH model on annual time series data of trade flows in Nigeria from the year 1970 to 2009. This study indicated that a negative and statistically insignificant transmission existed between exchange rate volatility and aggregate trade. The negative result though from annual time series data is in sync with that of Ameh (2010).

Odusola and Akinlo (2009) discovered a mixed result on the impacts of the exchange rate depreciation on the output in Nigeria. In the medium and long term, exchange rate depreciation exercised an expansionary impact on output, but in the short run exchange rate depreciation does not expand output. This result partially verifies what Rano-Aliyu found using Vector Error Correction Model (VECM) technique while Odusola and Akinio used VAR and VECM. So, the difference in their results can be credited to the difference in their methodologies.

In the same vein, Hossain (2008) agreed that exchange rate helps to relate the price systems of two different economies by ensuring the possibility for international trade and it also effects on the volume of imports and exports, as well as country's balance of payments position. Rogoffs and Reinhartl (2004) also pronounced that developing countries are relatively better off in the choice of flexible exchange rate regimes.

Sekkat and Varoudakis (2007) examined the effects of exchange rate volatility and misalignment on export performance of the panels of CFA and non-CFA countries. The study covered the period 1970-1992. The results showed that exchange rate volatility had a significant adverse effect on textile and chemical exports of non- CFA countries but an insignificant positive effect on those of CFA countries. A limitation of the study is that it used data covering two non-homogenous periods (that is fixed and flexible exchange rate era).

Gaps in the Literature

The relationship between exchange rate fluctuations and economic growth in Nigeria has been widely studied, yet significant gaps remain in understanding the specific impact of public expenditure within this context. While existing literature has explored the general effects of exchange rate fluctuations on macroeconomic indicators such as inflation, trade balance, and investment, there is a lack of focused analysis on how exchange rate fluctuations interact with government spending decisions to influence economic growth. This gap is particularly important for Nigeria, where frequent exchange rate fluctuations, driven by external shocks and domestic policies, have led to varying fiscal responses. However, the implications of these responses especially public expenditure on sustainable economic growth have not been fully explored.

This study aims to fill this gap by investigating the role of public expenditure in mediating the effects of exchange rate fluctuations on Nigeria's economic growth from 1986 to 2023. The period from 1986 to 2023 is particularly relevant, as it includes Nigeria's structural adjustment program, periods of exchange rate liberalization, as well as more recent currency crises and fiscal reforms.

The scope of the study will involve analyzing key variables such as exchange rate indices, government expenditure (both recurrent and capital), and GDP growth rates, using econometric models to assess the impact. The methodology will include time series analysis and cointegration techniques, allowing for an examination of the long-term relationships between exchange rate fluctuations, public expenditure, and economic growth. By applying these methods, this study will offer empirical evidence on how fiscal policy interacts with external shocks in shaping Nigeria's economic trajectory, providing valuable insights for policymakers and future research in this area

Methodology

The study examines the impact of exchange rate fluctuations on economic growth in Nigeria from 1986 to 2023. The study intends to analyse the influence of the explanatory variables such as exchange rate (EXR), Interest rate (INT), trade openness (TO), foreign direct investment (FDI) and public expenditure (PEX) on real GDP (RGDP).

Model Specification

The hypothesis had been stated with the view to examine the impact of exchange rate fluctuations on economic growth in Nigeria from 1986 to 2023. From the empirical literature and our theoretical framework, we adopt our model by modifying the RGDP model specified above in equation 3.2 as restated in equation 3.3.

$$F* = f\ (TO, FDI, PEX, K, Z) \tag{3.3}$$

Modifying the above model to suit our study, we have;

$$RGDP = f(EXR, INT, FDI, TO, PEX) \tag{3.4}$$

We shall further transform this mathematical model into econometric equation:

$$lnRGDP = \beta_0 + \beta_1 lnEXR_t + \beta_2 INT_t + \beta_3 lnFDI_t + \beta_4 lnTO_t + \beta_5 lnPEX_t + \mu_t \tag{3.5}$$

A Priori Expectation: $\beta_0 > 0, \beta_1 < 0, \beta_2 < 0, \beta_3 > 0, \beta_4 > 0, \beta_5 > 0$

Where;

$lnRGDP_t$ = Natural logarithm of real GDP growth rate for the current period

$lnEXR_t$ = Natural logarithm of exchange rate for the current period

INT_t = Interest rate for the current period

$lnFDI_t$ = Natural logarithm of foreign direct investment for the current period

$lnTO_t$= Natural logarithm of trade openness for the current period

$lnPEX_t$= Natural logarithm of public expenditure for the current period

β_0 = Constant

$\beta_1 - \beta_6$= Slope parameter estimates of exchange rate, interest rate, foreign direct investment, trade openness and public expenditure respectively.

μ_t = Error Term

Unit Root Test

It is used to test for the stationarity of the time series data. This involves testing of the order of integration of the individual time series under consideration. These tests are initially performed at levels and then in first difference form. Three different models with varying deterministic components are considered while performing the tests. These are (1) model with an intercept which assumes that there are no linear trends in the data such that the first differenced series has zero mean (2) model with a linear trend which includes a trend stationary variable to take account of unknown exogenous growth and (3) a model which neither includes a trend nor a constant. The most popular ones are Augmented Dickey-Fuller (ADF) test due to Dickey and Fuller (1979, 1981). Augmented Dickey Fuller (ADF) test statistics shall be compared with the critical values at 5% level of significance. A situation whereby the ADF test statistics is greater than the critical values with consideration on absolute values, the data at the tested order will be said to be stationary. Augmented Dickey-Fuller test relies on rejecting a null hypothesis of unit root (the series are non-stationary) in favour of the alternative hypotheses of stationarity. The tests are conducted with and without a deterministic trend (t) for each of the series.

The general form of ADF test is estimated by the following regression:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha \Delta y_t + e_t \quad (3.6)$$

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha \Delta y_t + \mu_1 + e_t \quad (3.7)$$

Where: Y is a time series, t is a linear time trend, Δ is the first difference operator, α 0 is a constant, n is the optimum number of lags in the dependent variable and e is the random error term.

The null hypothesis is that $\alpha_1 = 0$. If the null hypothesis is $\alpha_1 = 1$, then we conclude that the series under consideration Δy_thas unit root and is therefore non-stationary.

If the ADF test fails to reject the test in levels but rejects the test in first differences, then the series contains one unit root and is of integrated order one I(1). If the test fails to reject the test in levels and first differences but rejects the test in second differences, then the series contains two unit roots and is of integrated order two I(2).

Ordinary Least Squares (OLS) Method

Ordinary least squares (OLS) is a type of linear least squares method for estimating the unknown parameters in a linear regression model. OLS chooses the parameters of a linear function of a set of explanatory variables by the principle of least squares: minimizing the sum of the squares of the differences between the observed dependent variable (values of the variable being observed) in the given dataset and those predicted by the linear function of the independent variable.

Geometrically, this is seen as the sum of the squared distances, parallel to the axis of the dependent variable, between each data point in the set and the corresponding point on the regression surface—the smaller the differences, the better the model fits the data. The resulting estimator can be expressed by a simple formula, especially in the case of a simple linear regression, in which there is a single explanatory variable on the right side of the regression equation.

The OLS estimator is consistent when the regressors are exogenous, and—by the Gauss–Markov theorem—optimal in the class of linear unbiased estimators when the errors are homoscedastic and serially uncorrelated. Under these conditions, the method of OLS provides minimum-variance mean-unbiased estimation when the errors have finite variances. Under the additional assumption that the errors are normally distributed, OLS is the maximum likelihood estimator.

Co-integration Test

Engle and Granger (1987) state that if several variables are all I(d) series, their linear combination may be co-integrated, that is, their linear combination may be stationary. This means that the variables exhibit long-run relationship.

Decision rule: Accept H_0: (there is no significant co-integration relationship) if t-statistic is greater than asymptotic critical - value or if the P–value is less than the level of significance, otherwise accept

H_1: (there is significant co-integration relationship) if test statistic is less than the asymptotic critical values or if the P–value is greater than the level of significance. Testing sequence terminates if the null hypothesis cannot be rejected for the first time.

Sources of Data Collection

Data used for this study were secondary data. All data used for the effect of exchange rate fluctuations on economic growth were sourced from Central Bank (CBN) statistical bulletin for various years and WorldBank Development Indicators for 2022.

DATA ANALYSIS AND INTERPRETATION OF RESULT

The study examines the impact of exchange rate fluctuation on economic growth in Nigeria from 1986 to 2023. The attempt to examine exchange rate fluctuation and real gross domestic product (RGDP) in Nigeria led the researcher to subject the data collected to unit root test, Johansen cointegration test and Ordinary Least Squares (OLS), estimation and interpretation of result. The variables considered in this research work are real gross domestic product (RGDP), exchange rate, interest rate, foreign direct investment, trade openness and public expenditure.

Table 1.3: Augmented Dickey-Fuller Test for Stationarity

Variable	ADF Test Statistics		Order of Integration	Prob. Value
	1% Significant	5% Significant		
RGDP	-7.338365 (0) [-3.632900]	-3.233790 (0) [-2.948404]	I(1)	0.0000
EXR	-5.219878 (0) [-3.632900]	-5.219878 (0) [-2.948404]	I(1)	0.0001
INT	-3.306504 (0) [-3.632900]	-3.306504 (0) [-2.948404]	I(1)	0.0222
FDI	-5.990963 (0) [-3.632900]	-5.990963 (0) [-2.948404]	I(1)	0.0000
TO	-5.905912 (0) [3.632900]	-5.905912 (0) [-2.948404]	I(1)	0.0000
PEX	-6.045687(0) [-3.632900]	-6.045687 (0) [-2.948404]	I(1)	0.0321

Table 4.2: ADF Unit Root Test Results ***Source: Author's Computation, 2026***

Note: Mackinnon critical values are shown in parenthesis. The lagged lengths shown in brackets are selected using the minimum Schwarz Information criteria.

In Table 1.3, the test result indicates that the time series variables, real gross domestic product (RGDP), exchange rate (EXR), interest rate (INT), foreign direct investment (FDI), trade openness (TO) and public expenditure (PEX) were found to be non-stationary at levels. However, after first differencing the series, the results indicated that all the variables employed in the study are stationary at first difference both at 5% and 1% level of significance respectively. We can therefore conclude that all the variables are stationary at first difference; hence, we reject the null hypothesis "*no stationary*" at first difference. The result indicates that those incorporated series in the regression model have no unit-root. It also means that the series in their first difference are mean reverting and converge towards their long-run equilibrium. The result of the ADF unit root test also informed the decision of the technique adopted in this study.

Johansen Co-integration Test for Long Run Relationship

Table 1.3a: Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value (0.05)	Prob.**
None *	None *	109.2738	95.75366	0.0482
At most 1	At most 1	64.01776	69.81889	0.4760
At most 2	At most 2	41.39787	47.85613	0.3985
At most 3	At most 3	23.60549	29.79707	0.3328
At most 4	At most 4	9.437591	15.49471	0.1864
At most 5	At most 5	2.217494	3.841466	0.0613

Source: Author's Computation, 2026

*Trace test indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values*

Table 1.3b: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesis No. of CE(s)	Eigen value	Max-Eigen Statistic	Critical Value (0.05)	Prob.**
None *	0.725562	45.25606	40.07757	0.0120
At most 1	0.476010	22.61989	33.87687	0.5597
At most 2	0.398515	17.79238	27.58434	0.5125
At most 3	0.332888	14.16790	21.13162	0.3514
At most 4	0.186402	7.220096	14.26460	0.4634

Source: Author's Computation, 2026

*Max-eigenvalue indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values*

The output of Tables 1.3a and 1.3b above shows that the null hypothesis of no co-integrating vector is rejected at none co-integration vector at 5% significance level. This is owing to the fact that Table 1.3a according to trace

test indicates one (1) cointegrating equations and Table 1.3b confirms that there is one cointegrating equation between the variables. It thus follows that there exist a long-run equilibrium relationship among variables that is considered that is, real gross domestic product (RGDP), exchange rate (EXR), interest rate (INT), foreign direct investment (FDI), trade openness (TO) and public expenditure (PEX) in Nigeria between 1990 and 2021.

Result of the Ordinary Least Squares

Table 1.4: Long Run Estimates

Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.753865	0.599160	6.265211	0.0000
EXRFLC	-0.002682	0.000275	-9.748752	0.0000
EXR	0.003052	0.003166	0.964130	0.0424
INT	0.008889	0.014418	0.616531	0.5420
FDI	0.449291	0.286958	1.565703	0.0506
TO	0.603804	0.258887	2.332307	0.0264
PEX	2.496334	0.845352	2.953011	0.1273
R-Squared	0.730429		**F-statistic**	16.79953
Adj. R-squared	0.686950		**Prob(F-statistic)**	0.000000
Durbin-Watson	1.871619			

Source: Author's Computation, 2026

Table 1.4 indicates that the co-efficient of the constant is 3.753865, which implies that when all explanatory variables are held constant, real gross domestic product (RGDP) will be 3.753865. The results also revealed that the coefficient of EXRFLC is -0.002682, the absolute t-Statistic is 9.666 and the prob. value is 0.0000. Since our coefficient is negatively signed, with absolute t-Statistic value greater than 2, and prob. value less than 0.05; we confidently reject the null hypothesis and affirm that exchange rate fluctuation has a negative and significant effect on the real gross domestic product (RGDP) in Nigeria. This result is in line with the position of economic theory which asserts that when the exchange rate of a domestic country rises, foreign investors tend to withdraw from investing more in the host economies which may result in decrease in the output growth of an economy.

The results further showed that one percentage increase in exchange rate (EXR) causes real gross domestic product (RGDP) to rise by 0.003%, while keeping all the other explanatory variables constant, implying that exchange rate has positive and significant effect on real gross domestic product (RGDP) in Nigeria at 5 per cent level of significance. This effect will lead to increasing volume of Naira being traded and as the volume increases, foreign exchange market will impact real gross domestic product (RGDP) in Nigeria. The implication is that as government continues to pursue an expansionary monetary policy, the economy will continue to witness an increase in real gross domestic product (RGDP). Also, a percentage increase in interest rate (INT) will cause real gross domestic product (RGDP) to rise by 0.009% while a percentage increase foreign direct investment (FDI) will lead to an increase in real gross domestic product (RGDP) by 0.45% keeping other explanatory variables constant, indicating that interest rate and foreign direct investment positively impact real gross domestic product (RGDP) in Nigeria. Although, interest rate was found to be insignificant, but foreign direct investment was found to be signicant at 10% as shown by the probability value of 0.5420 and 0.0506 respectively. This is in line with economic theory.

Furthermore, a percentage increase in trade openness causes a positive and significant increase in real gross domestic product (RGDP) by 0.6% while keeping constant all the other explanatory variables. This means that trade openness provides a stimulus for real gross domestic product (RGDP) over the period under study. The reason for this is quite understandable as international trade policy expansion is good for the national economy. And lastly, public expenditure was found to exert positive effect on real gross domestic product, but this effect was not significant. This implies that public expenditure has not been well channelled in the right direction to foster economic growth in Nigeria. This could also be as a result of misappropriation of public funds and corrupt practices by government officials.

The R-squared value of 0.730429 implies that the model is a good fit as over 73% variation in the real gross domestic product (RGDP) is being explained by the variation in the explanatory variables employed in the model. Even after removing the effect of insignificant regressors, the adjusted R-squared value of 0.686950 implies that the model is still very good as about 68.9% variation in real gross domestic product (RGDP) is still explained in the model. The probability value of the F-statistic shows that the explanatory variables linearly explain changes in the dependent variable and thus the model is well specified. Also, the Durbin-Watson (DW) value of 1.871619 suggests that the model is free of serial correlation and therefore, there is no autocorrelation in the model. From Table 1.5 above, we can conclude that exchange rate fluctuation exhibited a negative and significant relationship with real gross domestic product (RGDP) in Nigeria between 1986 and 2023.

Result of Pairwise Granger Causality Test

Table 1.6: Enger Granger Causality Test

Lag Length: 1

Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
EXRFLC does not Granger Cause RGDP	31	4.32663**	0.0223
RGDP does not Granger Cause EXRFLC		0.11636	0.8906
EXR does not Granger Cause RGDP	31	2.80560**	0.0464
RGDP does not Granger Cause EXR		1.03927	0.3661
INT does not Granger Cause RGDP	31	0.87232	0.4283
RGDP does not Granger Cause INT		0.16715	0.8469
FDI does not Granger Cause RGDP	31	1.77906*	0.0861
RGDP does not Granger Cause FDI		2.18080	0.1305
TOPEN does not Granger Cause RGDP	31	0.86454	0.1354
RGDP does not Granger Cause TOPEN		3.656373	0.5342

Source: Author's Computation, 2026

** and ** denotes rejection of the hypothesis at the 0.05 and 0.1 level respectively.*

From Table 1.6 above, the first hypothesis that exchange rate fluctuation (EXRFLC) does not granger cause real gross domestic product (RGDP) is rejected since the probability value (0.0223) is less than 5% (0.05) level of significance, showing that exchange rate fluctuation (EXRFLC) does granger cause real gross domestic product (RGDP). The second hypothesis that RGDP does not Granger Cause EXRFLC is accepted since the probability value (0.8906) is greater than 5% (0.05) level of significance. This means that exchange rate fluctuation Granger causes real gross domestic product (RGDP) at 5% level of significance without feedback.

The third hypothesis that EXR does not Granger Causes RGDP is rejected since the probability value (0.0464) is less than 0.05 level showing that exchange rate (EXR) does granger cause real gross domestic product (RGDP). But the fourth hypothesis that RGDP does not Granger cause EXR is accepted since its probability value (0.3661) is greater than 0.05 level.

In addition, interest rate (INT), foreign direct investment, trade openness (TO) and public expenditure (PEX) do not Granger-cause real gross domestic product (RGDP) in Nigeria. In conclusion, there is a unidirectional causality between exchange rate (EXR), exchange rate fluctuation (EXRFLC) and real gross domestic product (RGDP) in Nigeria where the causality runs from exchange rate fluctuation (EXRFLC) to real gross domestic product (RGDP) without feedback.

Discussion of Findings

The results also revealed that the coefficient of EXVFLC is -0.002682, the absolute t-Statistic is 9.666 and the prob. value is 0.0000. Since our coefficient is negatively signed, with an absolute t-Statistic value greater than 2, and prob. value less than 0.05; we confidently reject the null hypothesis and affirm that exchange rate fluctuation has a negative and significant effect on the real gross domestic product (RGDP) in Nigeria. This result is in line with the position of economic theory which asserts that; when the exchange rate of a domestic country rises, foreign investors tend to withdraw from investing more in the host economies which result in the fall of the output growth in the economy.

The results further showed that one percentage increase in exchange rate (EXR) causes real gross domestic product (RGDP) to rise by 0.003%, while keeping constant all the other explanatory variables, implying that exchange rate positively and statistically significant on real gross domestic product (RGDP) in Nigeria at 5 per cent level of significance as it leads to increasing volume of Naira being traded, foreign exchange market impacted real gross domestic product (RGDP) in Nigeria. The implication is that as government continues to pursue an expansionary monetary policy, the economy will continue to witness an increase in real gross domestic product (RGDP). Also, a percentage increase in foreign direct investment will lead to an increase in real gross domestic product (RGDP) by 0.45% while a percentage increase interest rate (INT) will cause real gross domestic product (RGDP) to rise by 0.009% while keeping other explanatory variables constant, indicating that interesr rate positively impact real gross domestic product (RGDP) in Nigeria. Although, interest rate was found to be statistically insignificant, but real GDP growth rate was found to be signicant at 10% as shown by the probability value of 0.5420 and 0.0506 respectively. This is in line with economic theory.

Furthermore, a percentage increase in the trade openness causes a positive and significant increase in real gross domestic product (RGDP) by 0.6% while keeping constant other explanatory variables. This means that trade openness provides a stimulus for real gross domestic product (RGDP) over the period of study. The reason for this is quite understandable as international trade policy expansion is good for the national economy. However, public expenditure had insignificant positive effective on real gross domestic product (RGDP).

The R-squared value of 0.730429 implies that the model is a good fit, as over 73% variation in the real gross domestic product (RGDP) is being explained by the variation in the explanatory variables employed in the model. Even after removing the effect of insignificant estimators, the adjusted R-squared value of 0.686950 implies that the model is still very good, as about 68.9% variation in trade openness is still explained in the model. The probability value of F-statistic shows that the explanatory variables linearly explain changes in the dependent variable and thus the model is well specified. Also, the Durbin-Watson (DW) value of 1.18 suggests that the model is not free of serial correlation and therefore, there is positive autocorrelation in the model. From Table 4.5 above, we can conlude that exchange rate fluctuation exhibited a negative and statistically significant relationship with real gross domestic product (RGDP) in Nigeria between 1990 and 2021.

Conclusion

This study examined the impact of exchange rate fluctuation on economic growth in Nigeria (1986–2023), revealing a long-run relationship between RGDP, EXR, INT, FDI, TO, and PEX. The Granger causality test confirmed that exchange rate volatility significantly affects RGDP, with no feedback effect. While a stable exchange rate positively influenced growth, fluctuations had a negative and significant impact, increasing investment risks and deterring foreign investors. FDI and trade openness supported growth, whereas public expenditure, though positive, was insignificant due to inefficiencies. The findings emphasize currency stability, investment-friendly policies, and improved fiscal management as crucial for sustained economic growth in Nigeria.

These findings suggest that greater exchange rate volatility leads to higher investment risks, discouraging foreign investors who are essential drivers of economic growth. An economy plagued by frequent currency fluctuations, like Nigeria's, is likely to experience capital flight, weakening growth prospects. The study concludes that exchange rate fluctuations negatively and significantly impact real GDP, aligning with economic theory, which posits that rising exchange rates reduce foreign investment, ultimately slowing economic expansion.

Recommendations

Based on the results obtained, the following policy recommendations are made.

i. The CBN should adopt managed exchange rate policies to mitigate excessive fluctuations, ensuring stability for investors and businesses.

ii. The government should strengthen non-oil export sectors, including agriculture, manufacturing, and technology, to enhance forex inflows and reduce reliance on crude oil.

iii. Given the positive effect of FDI on growth, policies should focus on reducing regulatory barriers, improving infrastructure, and offering tax incentives to attract more investment.

iv. Monetary authorities should balance inflation control with investment-friendly interest rate policies, ensuring credit availability for businesses.

v. Policymakers should promote financial instruments such as currency hedging and forward contracts to help businesses and investors mitigate the risks associated with exchange rate fluctuations.

References

Adeaga, B.D. (2016). The relative effectiveness of fiscal and monetary policy in macroeconomic management in Nigeria. The African Economic and Business Review, 3(1): 23-40.

Adebiyi, M.A. and Dauda, K.A (2009). Exchange Rate, Trade Liberalization and Industrail Sector in Nigeria: A vector auto-regression mechanism. Journal of Economics.

Adeusi, S.O. & Aluko, O.A. (2015). Relevance of financial sector development on real sector productivity: 21st century evidence from Nigerian industrial sector. International Journal of Academic Research in Business and Social Sciences, 5(6), 118-132.

Aghin, J. O., Yusuf, S. A., & Ademeyi, O. A. (2016). The Impact of Exchange Rate Volatility on the Nigerian Economic Growth; An Empirical Investigation, International Journal of Academic Research in Business and Social Sciences, 4 (8), 224-233.

Aimar, A., Naeem, U. & Qaisar, A. M. (2015). Effect of exchange rate volatility on foreign Direct investment in SAARC countries. Middle-East Journal of Scientific Research 23 (2): 350-356. IDOSI Publications.

Akpokodje, G. and Omojimite, B.U. (2009), "The effect of exchange rate volatility on the imports of ECOWAS countries", Social Science, Vol. 4 No. 2, pp. 304-346.

Ali, Y. S., Mohamed, I. I., & Zahir, M. O. (2017). Impact of change in exchange rate on Foreign direct investment: Evidence from Somalia. Journal of Economics and Sustainable Development.

Aliyu, S.R.U. (2011). Exchange rate volatility and export trade in Nigeria: An empirical investigation. Munich Pers. RePEc Arch (MPRA) Paper 13490.

Aliyu, S.R.U. (2019). Exchange rate volatility and export trade in Nigeria: An empirical investigation. Munich Pers. RePEc Arch (MPRA) Paper 13490.

Amasoma, D., Nwosa, I. P. & Fasoranti, M. M. (2015). Exchange rate volatility and foreign capital inflow nexus: evidence from Nigeria. A Journal of the Faculty of Humanities and Social Sciences, Federal University, Oye-Ekiti.

Amoo, B.A.G., Odey, L.I., Kanya, W., Eboreime, M., Ekeocha, P., Akpan, N.I, Ochu, E.R. (2014). Effects of monetary policy on the real economy of Nigeria: A Disaggregated Analysis. CBN Occasional Paper 54, 1-65.

Asher, J.A. (2012). Impact of exchange rate fluctuation on the Nigerian economic growth. Journal of Economic Theory, 6(1), 14-25.

Azeez, E.O., Kolapo, A.B., & Ajayi, A.E. (2012). effect of exchange rate volatility on macroeconomic performance in Nigeria. CBN Journal of Applied Statistics, 2(2), 1-14.

Balami, M. (2016). Exchange Rate Depreciation and Nigeria Economic Performance AfterStructural Adjustment Programmes (Saps), Journal of Social Development, 5(2), 122-132

Barrett, K. A. (2016). Exchange rates and international: Trade Evidence fromTaiwan. Quarterly Journal of Economics, Vol. 321 pp1191-1217.

Calvo, T.R. and Reinhart C. J., (2016). What do the vars mean? Measuring the output effects of monetary policy. Journal of Monetary Economics 41(2): 277-300.

Cambazoğlu, B., & Güneş, S. (2016). The Relationship Between Foreign Exchange Rate and Foreign Direct Investment In Turkey. Economics, Management, and Financial Markets 11(1), 284–293

Central Bank of Nigeria., (2018). Statistical bulletin.Online edition. Available from www.cenbank.org.

Chowdhury, O. M. (2017). Foreign Direct Investment and Exchange Rates: A Case Study of US FDI in Emerging Market Countries. Retrieved from https://www.researchgate.net/publication/5199997

Cockcroft, L. and R, Riddell (1991). Foreign direct investment in Sub-Saharan Africa.Working paper WPS 619, Washington, DC: The World Bank.

Dada, A. E. & Oyeranti, F.B. (2012). Impact of exchange rate volatility on the Nigerian economy (Doctoral dissertation, University of Nigeria, Nsukka).

Danlami, H.M., Goldberg, L., & Charles, K. (2016) "Foreign Direct Investment, Exchange Rate Variability and Demand Uncertainty." International Economic Review, 36 (4), 855-73.

David, E., Umeh, C. I., & Ameh, A. (2019). Effect of Exchange and Interest Rates on Foreign Direct Investmentin Nigeria 2006-2018. International Journal of Contemporary Research and Review, 10 (07)

Dickey, D. A., Hasza, D. P., & Fuller, W. A. (1984). Testing for unit roots in seasonal time series. Journal of the American Statistical Association, 79(386), 355-367.

Dickson, K.O. & Ukavwe, S.A. (2013). Impact of exchange rate fluctuations on trade variations in Nigeria, International Business and Management, 10 (1), 104-110.

Dornbusch, R., (1976). Expectations and exchange rate dynamics. Journal of Political Economy, 84 (6), 1161-1176.

Durbin, J., & Watson, G. S. (1951). Testing for serial correlation in least squares regression. II. Biometrika, 38(1/2), 159-177.

Ehinomen, H.A. and Oladipo, H.I. (2010). Impact of exchange rate appreciation on domestic output: Further empirical evidence from Nigeria. Pakistan Journal of Social Sciences, 7(2): 137-142. Available from 10.3923/pjssci.2010.137.142.

Engle, R. F., & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. Econometrica: journal of the Econometric Society, 251-276.

Eregha, P. B. (2017). Exchange Rate Policies and FDI Flow in WAMZ, Working Paper Series No 254, African Development Bank, Abidjan, Côte d'Ivoire.

Ettah, Y. S., Mohamed, I. I., & Zahir, M. O. (2012). Impact of Change in Exchange Rate on Foreign Direct Investment: Evidence from Somalia Journal of Economics and Sustainable Development 8, (8), 47

Fernandez-Arias, E. & Montiel, P. J. (1995). The surge in capital flows to developing countries: An analytical overview. The World Bank Economic Review, vol. 10, No. 1, 51-77.

Funyina, T. K (2018). The effect of exchange rate volatility on foreign capital flows Inflows in Zambia (Master's thesis, University of Zambia, Lusaka).

Gbadamosi, B. (2017). Why we intervened in forex market-CBN. Available at www.punchng.com/

Granger, C. W. (1969). Investigating causal relations by econometric models and cross-spectral methods. Econometrica: Journal of the Econometric Society, 424-438.

Gujarati, D. (2004). Basic econometrics. The McGraw− Hill.

Hymer, S. (1976). The international operations of nation firms: A study of foreign direct Investment, Cambridge. MLT Press International Monetary Fund, 1998. Balance of Payment manual, fifth edition, IMF Publication.

Jaratin, L., Mori, K., Dullah, M., Lim, T. S., & Rozilee, A. (2014). Exchange Rate Movement and Foreign Direct Investment in Asean Economies Economics Research Internationa, 1-10

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. Oxford Bulletin of Economics and statistics, 52(2), 169-210.

Klein, G. & Shambaugh, W (2010). Transmission mechanism of monetary policy in central and eastern europe. Centre for Social and Economic Research (CASE)(Report No. 52).

Mbanasor, B. O. & Obioma, J. (2017). Exchange rate fluctuations and foreign private Investments in Nigeria. International Journal of Economics and Business Management Vol. 3 No. 8.

Meier, G. M. (1995). Leading issues in economic development. New York: Oxford University press. National Bureau of Statistics Publications (Various compilations). www.nigerianstat.gov.ng

Obansa, A.G., Odey, L.I., Kanya, W., Eboreime, M., Ekeocha, P., Akpan, N.I., … Ochu, E.R. (2013). The relationship between exchange rate and economic growth in Nigeria: A Disaggregated Analysis. CBN Occasional Paper 54, 1-65.

Obi, C. (2017). The impact of foreign exchange volatility on foreign direct investment in Nigeria. Global Journal of Management and Business Research: C Finance.

Odili, O. (2015). Exchange rate volatility, stock market performance and foreign direct Investment in Nigeria. International Journal of Academic Research in Accounting, Finance and management sciences Vol. 5, pp. 172-184.

Okoroafor, I. (2017). Why we intervened in forex market-CBN. Available atwww.punchng.com/

Oladipupo, E. & Onotaniyohuwo, O. F. (2011). Exchange rate volatility and Balance of Payment in Nigeria. Journal of Economics, 5(7), 14-31.

Oladipupo, M.S. and S.K. Onotaniyohuwa, (2018). The effect of monetary policy on output in emu: A sign restriction approach. Journal of Macroeconomics 30: 1756-1791.

Opeopluwa, D. Umeh, C. &Ameh, .A. (2012). The effect of exchange rate fluntuation on Nigeria Manufacturing Sector.African Journal of Business Management.

Opeopluwa, D. Umeh, C. &Ameh, .A. (2012). The effect of exchange rate fluctuation on Nigeria Manufacturing Sector.African Journal of Business Management.

Osei-Assibey, K. (2024), "Exchange rate volatility, earnings uncertainty and bidirectional trade flows: empirical evidence on Ghana", International Economic Journal, Vol. 31 No. 1, pp. 135-157.

Osinubi, T. S. & Amaghionyeodiwe, L. A. (2009). Foreign direct investment and exchange Rate volatility in Nigeria. International Journal of Applied Econometrics and Quantitative Studies Vol. 6 (2).

Rano, J. D. & Aliyu, P. (2009). The Impact of Exchange Rate on FDI and the Interdependence of FDI over Time. ADB Economics Working Paper Series, No. 164. Asian Development Bank (ADB), Manila

Renania, H. S., & Mirfatahb, M. (2012). The Impact of Exchange Rate Volatility on Foreign Direct Investment in Iran Procedia Economics and Finance, 1, 365 – 373

Rodrick, S. E. (2015). Exchange rate depreciation on Economic Growth. The Review of Economics and Statistics, vol. 70, No 1.

Senadza, B. and Diaba, D.D. (2017), "Effect of exchange rate volatility on trade in Sub-Saharan Africa", Journal of African Trade, Vol. 4 Nos 1-2, pp. 20-36.

Serenis, E.O. & Tsounis, A.E (2014). The effect of volatility on two small countries, Croatia and Cyprus, on aggregate exports. Applied Economics, Taylor & Francis (Routledge), 2014. 39 (20), pp.2553-2564.

Sokang, K. (2018). The Impact of Foreign Direct Investment on the Economic Growth in Cambodia: Empirical Evidence. International Journal of Innovation and Economic Development 4(5), 31-38.

Stockman, M. (2009). The Disappearing Openness-Inflation Relationship: A Cross-Country Analysis of Inflation Rates, IMF Working Paper WP/99/161.

Udeh, T. K (2018). The effect of exchange rate volatility on foreign capital flows Inflows in Zambia (Master's thesis, University of Zambia, Lusaka).

Udeh, T. K (2018). The effect of exchange rate volatility on foreign capital flows Inflows in Zambia (Master's thesis, University of Zambia, Lusaka).

Appendix

Unit Root Results

Null Hypothesis: RGDP has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.948404	0.0000
Test critical values:	1% level	-7.338365	
	5% level	-3.233790	
	10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: EXR has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.948404	0.0001
Test critical values:	1% level	-5.219878	
	5% level	-5.219878	
	10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: INT has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.948404	0.0222
Test critical values:	1% level	-3.306504	
	5% level	-3.306504	
	10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: FDI has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.632900	0.0000
Test critical values:	1% level	-5.990963	
	5% level	-5.990963	
	10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: TO has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.632900	0.0000
Test critical values:	1% level	-5.905912	
	5% level	-2.948404	
	10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: PEX has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.632900	0.0321
Test critical values:	1% level	-6.045687	
	5% level	-6.045687	
	10% level	-2.610263	

*MacKinnon (1996) one-sided p-values.

Cointegration Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.** Critical Value
None *	None *	109.2738	95.75366	0.0482
At most 1 *	At most 1 *	64.01776	69.81889	0.4760
At most 2 *	At most 2 *	41.39787	47.85613	0.3985
At most 3 *	At most 3 *	23.60549	29.79707	0.3328

At most 4 *	At most 4 *	9.437591	15.49471	0.1864
At most 5 *	At most 5 *	2.217494	3.841466	0.0613

*Trace test indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values*

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	Prob.**
No. of CE(s)	Eigenvalue	Statistic	Critical Value	
None *	0.725562	45.25606	40.07757	0.0120
At most 1 *	0.476010	22.61989	33.87687	0.5597
At most 2 *	0.398515	17.79238	27.58434	0.5125
At most 3 *	0.332888	14.16790	21.13162	0.3514
At most 4 *	0.186402	7.220096	14.26460	0.4634

*Max-eigenvalue indicates 1 cointegrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values*

Results of Ordinary Least Squares

Method: Ordinary Least Squares

Date: 06/1/26 Time: 17:01

Sample (adjusted): 1986 2023

Included observations: 38 after adjustments

Dependent variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.753865	0.599160	6.265211	0.0000
EXRFLC	-0.002682	0.000275	-9.748752	0.0000
EXR	0.003052	0.003166	0.964130	0.0424
INT	0.008889	0.014418	0.616531	0.5420
FDI	0.449291	0.286958	1.565703	0.0506
TO	0.603804	0.258887	2.332307	0.0264
PEX	2.496334	0.845352	2.953011	0.1273

R-squared	0.730429	F-statistic	16.79953
Adjusted R-squared	0.686950	Prob (F-statistic)	0.000000
S.E. of regression	0.049636	Sum squared resid	0.098548
Durbin-Watson	1.871619		

Granger Causality Results

Pairwise Granger Causality Tests

Date: 06/1/26 Time: 17:09

Sample (adjusted): 1986 2023

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
EXRFLC does not Granger Cause RDGP	31	4.32663	0.0223
RGDP does not Granger Cause EXRFLC		0.11636	0.8906

EXR does not Granger Cause RGDP	31	2.80560	0.0464
RGDP does not Granger Cause EXR		1.03927	0.3661
INT does not Granger Cause RGDP	31	0.87232	0.4283
RGDP does not Granger Cause INT		0.16715	0.8469
FDI does not Granger Cause RGDP	31	1.77906	0.0861
RGPD does not Granger Cause FDI		2.18080	0.1305
TOPEN does not Granger Cause RGDP	31	0.86454	0.1354
RGDP does not Granger Cause TOPEN		3.656373	0.5342

Biographies

PLACE AND/OR DATE OF BIRTH: LAGOS, NIGERIA/ 12TH/ DEC/ 1991

EDUCATIONAL BACKGROUND: NCE (AOCOED) 2009. ECONOMICS AND MATHEMATICS, B.ED (UNIVERSITY OF IBADAN, IBADAN) 2014 ECONOMICS AND MATHEMATICS, M.SC (UNIVERSITY OF LAGOS) 2017 ECONOMICS, PHD IN VIEW (UNIVERSITY OF LAGOS) ECONOMICS (ALL OBTAINED IN NIGERIA)

Field:

Time Series Econometrics, Finance, Econometric Analysis, Econometric Modeling, Applied Economics, Digital / Information Economics (Emerging Area)