Influence of Exchange Rate on Foreign Direct Investment in Nigeria

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Abstract

This study examined the trends of exchange rate and Foreign Direct Investment (FDI) in Nigeria over the period 1981 to 2021. Trend analysis and descriptive statistics were employed in analyzing the relationship between exchange rate and Foreign Direct Investment (FDI). Exchange rate history reveals a dynamic pattern with stability and modest appreciation in the early 1980s, followed by sharp depreciation, hyperinflation, and substantial devaluation in the late '80s and early '90s. The new millennium saw fluctuations until relative stability from 2006 to 2015, only to face another sharp depreciation post-2015. This exchange rate narrative reflects Nigeria's economic journey, influenced by both internal and external factors. Simultaneously, FDI trends in Nigeria portray a story of economic development, policy changes, and external forces. Fluctuating levels in the early '80s gave way to increased FDI in the late '80s and early '90s, driven by reforms and favorable conditions. The 2000s marked significant growth in FDI, aligned with economic reforms and Nigeria's status as an oil-exporting nation. However, post-2013, a decline occurred, possibly linked to global economic factors and domestic challenges, followed by a resurgence in later years. This study recommended the need for balanced economic policies and effective currency management to create a conducive investment climate, ultimately influencing investor confidence and FDI levels. Nigeria's economic resilience and adaptability are evident in the face of internal and external challenges, making it a compelling destination for foreign capital

Keywords: Exchange rate, Foreign Direct Investment, Inflation Rate, Interest rate, Trade openness.

Introduction

Capital inflows, encompassing various forms of investment, significantly impact the economies of receiving nations. This includes Foreign Direct Investment (FDI), where foreign investors acquire physical assets and financial instruments in the host country. However, the ability to accumulate savings in the host country is hindered by factors like low income and financial illiteracy (Githaiga & Kilong'i, 2023). In 2019, international capital flows surpassed $1.5 trillion, benefiting developing countries, particularly in Africa, with Nigeria receiving a substantial share (World Bank, 2020). FDI is seen as a catalyst for economic development, bringing in resources, job opportunities, technology, and enhanced skills. Despite this potential, Nigeria has faced challenges in attracting FDI, with inflows fluctuating over the years.

The fluctuation in FDI inflows is influenced by factors such as exchange rate stability, corruption levels, and socio-political dynamics. These elements play a crucial role in

determining the extent and direction of foreign capital inflows. Given the significance of FDI for emerging nations, understanding the variables influencing these inflows is essential (Adegboye *et al.*, 2020). The exchange rate behavior emerges as one of the key factors shaping FDI movements in Nigeria. To bridge the gap between the country's need for FDI and its struggles to attract and retain substantial investments, it is crucial to delve into the dynamics of the exchange rate and its influence on foreign investment. The relationship between these factors is multifaceted and warrants comprehensive analysis, considering the unique challenges and opportunities presented by Nigeria's economic landscape.

The exchange rate, representing the cost of a foreign currency in terms of domestic currency, plays a pivotal role in the distribution of investment expenditure across nations and in the volume of Foreign Direct Investment (FDI) (Asmae & Ahmed, 2019). Factors such as a country's exports, imports, and structural characteristics influence exchange rates. An increase in exports relative to imports strengthens the domestic currency, while an excess of imports weakens it (Rashid & Lin, 2018).

FDI is forward-looking, driven by investor expectations and confidence in future returns. Exchange rate instability can deter FDI as it introduces uncertainty and caution among foreign investors (Said1 et al., 2023). Exchange rate fluctuations impact both FDI volume and distribution. A depreciating currency can reduce costs, making the country more attractive. However, it also creates uncertainty, deterring investors who seek stability (Asmae & Ahmed, 2019).

Exchange rate volatility is the degree of oscillation in exchange rate values, representing risk due to unpredictable rate changes (Ozturk, 2017). This volatility is instrumental in assessing economic performance and acts as a pricing parameter. Exchange rates are driven by currency demand and supply dynamics, impacting competitiveness. A declining exchange rate enhances currency competitiveness (Rashid & Lin, 2018). Exchange rate instability affects imports, exports, production, balance of payments, and reserves (Alabi, 2019). Investors have opportunities in foreign currency investments due to exchange rate operations. Stability in real and predicted exchange rate values is preferred by investors and traders alike. Exchange rates significantly influence attracting foreign investment to the home country (Ismaila, 2016).

Exchange rates, driven by exports, imports, and currency dynamics, play a crucial role in shaping FDI decisions. Exchange rate stability is vital for investor confidence, as it reduces uncertainty and enhances competitiveness. Nigeria's domestic exchange rate, in recent times, has become a notable concern, underscoring its importance in attracting foreign investment and maintaining economic stability. This paper examined the trends of the exchange rate and FDI in Nigeria for the period 1981 - 2021.

Literature Review

Foreign Direct Investment (FDI) involves a lasting interest in a foreign enterprise, characterized by deep engagement, technology transfer, job creation, and productivity enhancement (World Bank, 2015; UNCTAD, 2020). FDI integrates economies by transferring capital, resources, expertise, and technologies between countries, benefiting both host and home nations (IMF, 2013). Factors driving FDI include exchange rates, economic and political stability, and the demand for a country's goods and services, among others (Kenny, 2019). Exchange rates play a vital role due to their impact on asset values and returns (Eregha, 2017). The relationship between exchange rates and FDI's attractiveness is a subject of debate.

Currency depreciation can attract foreign investors, but steady depreciation may discourage investment (Kunofiwa, 2015). Nigeria's history of FDI dates back to colonial times, significantly influenced by oil discovery (Asmae & Ahmed, 2019). Nigeria recognizes FDI's importance and has implemented policies to attract and facilitate FDI inflows. However, policy adjustments, including exchange rate policies, have been necessary to drive growth in specific sectors (Eregha, 2017). Nigeria's exchange rate policy has shifted from a fixed parity to a flexible exchange rate regime, allowing market forces to determine exchange rates based on supply and demand (Obi et al., 2016). This transition reduces the need for external interventions, enabling the pursuit of internal monetary policies (Dabwor et al., 2019). In summary, FDI serves as a crucial driver of economic growth, and exchange rates play a pivotal role in attracting foreign investment, particularly in Nigeria's evolving economic landscape.

This study discusses Mundell-Fleming model, the Product Life-Cycle Theory, and the Internalization Theory as they relate to exchange rate and FDI. The Mundell-Fleming model is an economic framework that describes the relationship between exchange rates, FDI, and economic growth in an open economy. It was developed by Robert Mundell and J. Marcus Fleming in the 1960s. The model assumes that exchange rates are determined in the foreign exchange market, which is affected by supply and demand for a country's currency. The model suggests that policymakers should consider the exchange rate regime in place when designing economic policies and that FDI can be an important driver of economic growth. The Product Life-Cycle (PLC) Theory explains how the demand for a product evolves and how this evolution affects the international trade and investment decisions of firms. The theory was developed by Raymond Vernon in the 1960s and suggests that the life cycle of a product can be divided into three stages: innovation, maturation, and standardization. The theory explains how the demand for a product evolves and how this evolution affects the international trade and investment decisions of firms. The Internalization Theory is an economic framework that explains how firms decide whether to export or invest directly in foreign markets. The theory was developed by Buckley and Casson (1976), which relied on the assumption of market imperfections. This theory suggests that firms expand their operations abroad to overcome market failures and increase their monopolistic advantage. It explains how firms decide whether to export or invest directly in foreign markets, and has important implications for exchange rates, FDI, and economic growth.

Despite the large body of research investigating the relationship between exchange rates on Foreign Direct Investment (FDI), the evidence remains inconclusive. Cambazoğlu and Güneş (2016) ventured to uncover the intricate dance between Turkey's FDI inflows and the real exchange rate. The culmination of their effort unveiled a co-integration relationship, a testament to the substantive sway of real exchange rate shifts over time on Turkey's FDI landscape. Meanwhile, Morina et al. (2020) navigated the complexities of Central and Eastern European (CEE) economies, their focus honed on the influential currents of real effective exchange rate (REER) volatility and economic growth. Their findings shows exchange rate volatility cast a significant and negative shadow over real economic growth. Jana (2016) embarked on a comprehensive exploration within the Visegrad Countries (V4): The Czech Republic, Hungary, Poland, and Slovakia. The findings defied conventional wisdom, revealing that heightened exchange rate volatility, while posing risks, did not uniformly curtail foreign trade turnover. Jana's research underscored the indispensability of regional market characteristics and specific product dynamics in understanding exchange rate impacts.

Amid the evolving landscapes of developing nations, a chorus of studies resonates, delving into the intricate nexus between exchange rates and Foreign Direct Investment (FDI). Eregha (2017) illuminated this relationship through a lens focused on the West African Monetary Zone (WAMZ). Their findings, a symphony of insight, unveiled the adverse impact of exchange rate uncertainty on FDI flow within the zone. Meanwhile, inflation expectations yielded minimal impact. The tapestry of policy regimes unveiled a dichotomy, with fixed exchange rates hindering FDI while intermediate policies paved a path for positive outcomes. On a parallel stage, Abd-El et al. (2021) cast their gaze upon Egypt, weaving a narrative that encapsulates the influences shaping FDI inflows. Their findings revealed a detrimental impact of exchange rate on FDI inflows. Amid the rich tapestry of economic exploration, Akinlo and Onatunji (2021) embarked on a journey to probe the enigmatic relationship between exchange rate volatility and FDI across selected countries within the Economic Community of West African States (ECOWAS). Their findings shows negative sway of nominal exchange rate volatility echoed across all selected countries, its significance unfurling prominently in Ghana, Sierra Leone, and Nigeria. Simultaneously, the anticipated negative imprint of real exchange rate volatility imprinted its mark in Nigeria, Togo, Sierra Leone, and Cote d'Ivoire. While Ghana and Gambia witnessed a positive effect, the ink lacked statistical significance. A dance of causality emerged, flowing unidirectional from exchange rate volatility to FDI across the selected nations, the exception being Ghana under the sway of the nominal exchange rate. Yet, a bi-directional connection shimmered in Nigeria and Sierra Leone when real exchange rate volatility entered the narrative.

In a studies conducted in Nigeria by Adokwe et al., (2019), they examined the impact of exchange rate volatility on FDI in Nigeria. The findings obtained from the GARCH analysis indicated that exchange rate volatility in Nigeria exhibited consistency and persistence over the study period. Furthermore, the results of the FDI model revealed that exchange rate volatility had a significant negative impact on FDI in Nigeria during the period examined in the study. In another study by Benson et al. (2019) on the nexus of exchange and interest rates' sway upon FDI in Nigeria. The study revealed a positive and statistically significant connection between exchange rate and FDI. Zakari (2017) also ventured into the terrain of exchange rate fluctuations impact on FDI from 1990 to 2015. His study showed a robust positive connection between FDI and exchange rates in Nigeria, alongside a fainter positive link between FDI and GDP. Meanwhile, Odili (2015) investigated the crux of exchange rate volatility, stock market performance, and FDI in Nigeria. He found that exchange rate volatility casts a shadow, its negative and significant impact echoing in both the long and short runs on FDI inflow to Nigeria.

Methodology

This study employed the Two-gap Model. The Model is an economic framework used to analyse the constraints and imbalances in an economy's development process (Olokoyo & Amaghionyeodiwe, 2020). It focuses on identifying two gaps: the savings-investment gap and the foreign exchange gap. The model helps to understand the relationship between these gaps and the role of various factors, including exchange rates, in influencing economic development. In the Two-gap Model, the savings-investment gap refers to the difference between a country's desired level of investment and its level of domestic savings. This gap indicates the need for external financing to bridge the investment-savings mismatch. The foreign exchange gap, on the other hand, represents the disparity between the demand for foreign exchange (e.g., to

finance imports or FDI) and the available supply of foreign exchange from exports or foreign investments (Uwubanmwen & Okuonghae, 2018). The Two-gap approach to economic development posits that achieving the desired rate of growth in developing countries is impeded by both the savings gap and the foreign exchange gap. According to national income accounting principles, the investment-savings gap (I-S) is equivalent to the export-import gap (E-M). It is widely recognized that if a country invests more than it saves, it will incur balance of payments (BOP) deficits. Similarly, a surplus of imports over exports indicates that an economy is consuming more than it is producing. To attain the desired growth rate in the economy, Chenery and Strout (1966) argue that foreign investment serves as a solution to bridge these two gaps. By attracting FDI, a country can close the savings-investment gap and the export-import gap, thus fostering economic growth.

Chenery and Adelman (1966) argue that a savings gap occurs when domestic savings are insufficient to meet the investment required for achieving the desired growth and to bridge this gap foreign investment can be utilized. This leads to the hypothesis that there exists a constant relationship between the desired foreign currency requirements and net export income. Similarly, a foreign exchange gap emerges when net export revenues fall short of the necessary foreign exchange. Foreign investment can potentially address this gap by providing the required foreign exchange. Thus, the two gaps can be represented within the framework of national income accounting (NIA) identities using the aggregate spending method.

$$E - Y = I - S = X - M = F \qquad (1)$$

In the context of the national income accounting identities, the variables "E" represents national expenditure, "Y" represents national output and income, "I" represents investment, "S" represents saving, "X" represents exports, "M" represents imports, and "F" represents net capital inflow. When total spending, represented by "E," exceeds total production, represented by "Y," the economy experiences a shortfall in income. To bridge this gap, foreign capital inflows, denoted as "F," are required. The need for foreign capital arises from two gaps: the savings gap (I - S), which results from domestic savings being insufficient to cover the required investment, and the foreign exchange gap (X - M), which occurs when more foreign exchange is needed for imports than is generated through net export revenues.

The magnitude of the shortfall and the required foreign aid depend on the dominant deficit at a given moment. If the savings gap is greater than the foreign exchange deficit, it indicates the existence of a savings constraint in the economy.

On the other side, the economy has a foreign exchange constraint if the foreign exchange deficit is greater than the savings gap and the foreign exchange deficit is largely affected by the rate of exchange in the country. This led to the postulation that;

$$FDI_t = f(EXRT_t) \qquad (2)$$ The mathematical form of Two-Gap model as adapted from the work of (Oladeji and Musa, 2022) is expressed as follows:

$$FDI_t = \beta_0 + \beta_1 EXRT_t \qquad (3)$$

Based on the variables of this study, the econometric form of the model is expressed as follows;

$$FDI_t = \beta^0 + \beta_1 EXRT_t + U_t \qquad (4)$$

Where:

FDI - Foreign Direct Investment

EXRT - Exchange Rate

β_0, β_1 - Coefficients to be estimated

U - Stochastic variable or error term, and

t - Time

Discussion and Findings

The analysis of exchange rate trends in Nigeria from 1981 to 2021 presents a dynamic economic narrative marked by notable fluctuations. The early 1980s saw stability and moderate appreciation, with rates rising from N0.63 in 1981 to N0.89 in 1985, fostering economic growth. However, sharp depreciation started in 1986, leading to significant devaluation, reaching N7.39 in 1989. The early 1990s witnessed hyperinflation and continued depreciation. From 1995 to 1999, rates stabilized at N21.89, indicating efforts to restore currency stability after the turbulence of the early '90s. The early 2000s brought substantial depreciation, rising from N21.89 in 1999 to N132 in 2005 due to economic reforms and external pressures. Relative stability persisted from 2006 to 2015, with rates fluctuating between N128.5 and N199. However, from 2016 to 2021, the exchange rate rapidly depreciated to N430 amid economic challenges and fluctuating oil prices. This complex history reflects Nigeria's economic evolution and the impact of external factors.

EXRT

Figure 1: Graph Showing Trends of Exchange Rates 1981 - 2021
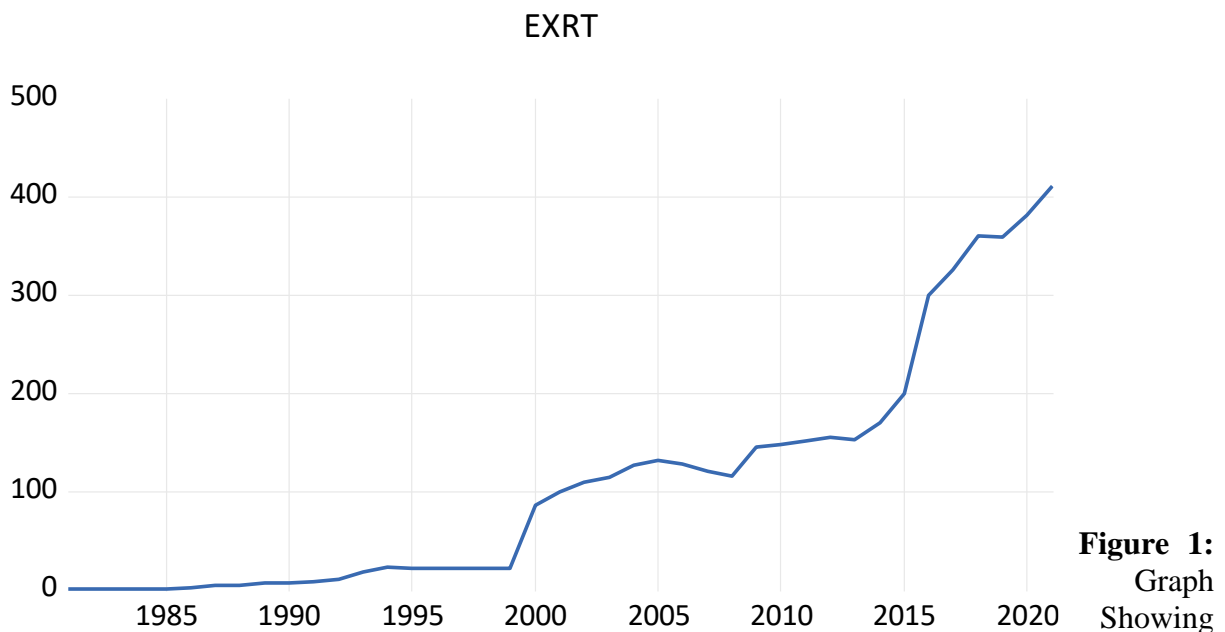
The analysis of Foreign Direct Investment (FDI) trends in Nigeria from 1981 to 2021 reveals a dynamic story of economic development, external influences, and policy changes. In the early 1980s, FDI fluctuated between $0.19 billion and $0.54 billion, reflecting relatively low levels of investment. The period from 1986 to 1989 witnessed increased FDI, ranging from $0.19 billion to $1.88 billion, driven by economic reforms and favorable conditions. The early 1990s saw fluctuations, with FDI ranging from $0.34 billion in 1990 to $1.96 billion in 1994, possibly influenced by external factors and domestic challenges. The mid to late 1990s showed stability,

with FDI figures remaining relatively constant between $0.30 billion and $1.00 billion, signaling efforts to create a conducive investment environment. The early 2000s marked significant growth, with FDI rising from $1.14 billion in 2000 to $4.98 billion in 2005, driven by economic reforms and Nigeria's status as an oil-exporting nation. From 2006 to 2013, FDI rapidly expanded, peaking at $8.84 billion in 2011, attributed to economic growth, rising oil prices, and investor confidence. However, FDI declined post-2013, possibly due to global economic factors and domestic challenges. After a period of fluctuation, FDI began to recover, reaching $3.31 billion in 2021, indicating renewed foreign investor interest.

Figure 2: Graph Showing Trends of FDI 1981 - 2021
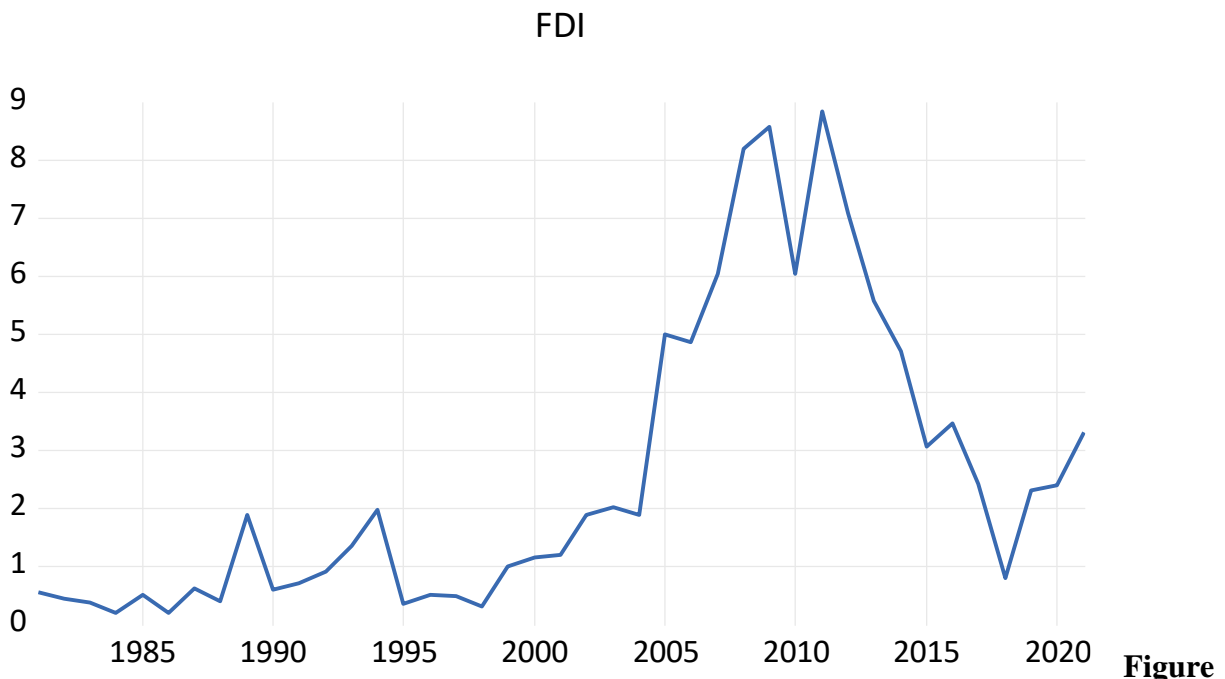
The descriptive statistics for the variables EXRT and FDI provide valuable insights into the characteristics of these data sets. Firstly, both variables, EXRT and FDI, exhibit positively skewed distributions. This means that the majority of data points for both variables are concentrated on the left side of the distribution, with a long tail extending towards the right. In other words, there are some unusually high values (outliers) in both sets that pull the mean to the right of the median.

The mean and median are measures of central tendency. In the case of EXRT, the mean is approximately 109.3420, while the median is 99.00. For FDI, the mean is about 2.531463, and the median is 1.87000. The difference between the mean and median in both cases suggests that the data sets are not symmetric and have a positive skew, where the tail on the right side is longer. This skewness is often indicative of the presence of outliers or extreme values in the data, which influence the mean more significantly.

The standard deviation is a measure of the spread or dispersion of data. EXRT has a considerably larger standard deviation of approximately 120.7076, signifying greater variability in the data. FDI, on the other hand, has a much smaller standard deviation of about

2.535859, indicating that its values are more tightly clustered around the mean. This means that EXRT data points vary more widely from the mean compared to FDI.

Kurtosis measures the tailedness and peakedness of a data distribution. Both EXRT and FDI have kurtosis values greater than 3, which is the kurtosis value for a normal distribution. This suggests that their distributions have fatter tails and are more peaked (leptokurtic) than a normal distribution. The presence of extreme values in the tails of the distribution contributes to this higher kurtosis.

Lastly, the Jarque-Bera test is a test of normality. A low p-value for FDI (0.010061) suggests that the FDI data significantly departs from a normal distribution, reinforcing the observation of positive skew and high kurtosis. For EXRT, the p-value (8.772447) also indicates a departure from normality, though less significant than in the case of FDI.

These descriptive statistics collectively paint a picture of both EXRT and FDI having positively skewed, non-normally distributed data with differing degrees of variability and kurtosis. Understanding these characteristics is essential for making informed decisions and conducting further statistical analyses on these data sets.

Table 1: Descriptive Statistics

	EXRT	FDI
Mean	109.3420	2.531463
Median	99.00000	1.870000
Maximum	411.0000	8.840000
Minimum	0.630000	0.190000
Std. Dev.	120.7076	2.535859
Skewness	1.125260	1.156574
Kurtosis	3.265097	3.183399
Jarque-Bera	8.772497	9.198160
Probability	0.012447	0.010061
Sum	4483.020	103.7900
Sum Sq. Dev.	582812.8	257.2233
Observations	41	41

The analysis of exchange rate and Foreign Direct Investment (FDI) trends in Nigeria unveils a complex and interconnected economic landscape over the past four decades. The exchange rate's journey reflects the country's economic evolution, with notable fluctuations driven by various internal and external factors. For instance, periods of sharp depreciation often coincided with economic challenges and external pressures, which may have influenced investor confidence. Notably, relative exchange rate stability from the mid-2000s to 2015 corresponded with significant FDI growth, underlining the importance of a stable currency in attracting foreign investment. Conversely, the post-2013 decline in both FDI and the exchange rate suggests a potential link between unfavorable exchange rate movements, global economic conditions, and investor sentiment. This highlights the interplay between exchange rates and

FDI, where currency stability is crucial for creating an attractive investment climate. The FDI trends reveal Nigeria's dynamic economic development and the impact of policy changes and external factors on investment levels. The periods of growth in FDI, particularly during economic reforms and favorable conditions, emphasize the role of government policies and global economic conditions in attracting foreign investment. The decline in FDI post-2013, possibly due to global economic factors and domestic challenges, underscores the sensitivity of investment decisions to external and internal economic conditions. The subsequent recovery in FDI signals renewed foreign investor interest, suggesting that despite challenges, Nigeria remains an appealing destination for foreign capital. In summary, the exchange rate and FDI trends demonstrate a symbiotic relationship, where exchange rate stability can positively influence FDI levels, and FDI can be a reflection of investor confidence in the broader economic climate. These findings emphasize the importance of balanced economic policies and currency management in attracting and retaining foreign investment.

The descriptive statistics analysis offer valuable insights into the characteristics of the exchange rate (EXRT) and foreign direct investment (FDI) data. Both variables exhibit positively skewed distributions, suggesting that the majority of data points are concentrated on the left side of the distribution with long tails extending to the right, which is indicative of the presence of outliers or extreme values. Notably, the means of both EXRT and FDI exceed their respective medians, underscoring the asymmetric nature of the data, where extreme values disproportionately affect the mean.

Conclusion and Recommendations

The analysis of exchange rate and Foreign Direct Investment (FDI) trends in Nigeria from 1981 to 2021 reveals an intricate relationship between economic variables and external influences. Exchange rates exhibit significant fluctuations over the years, reflecting the impact of economic reforms, external pressures, and the country's economic stability. Notably, the sharp depreciation of the exchange rate in the late 1980s and early 1990s coincides with a period of hyperinflation and continued depreciation, reflecting the challenges faced by the Nigerian economy during that time. In contrast, the relative stability in exchange rates from the mid-2000s to 2015 corresponds to a period of substantial FDI growth, indicating that a stable currency can attract foreign investment. The subsequent depreciation in the exchange rate, coupled with a decline in FDI post-2013, possibly due to global economic factors and domestic challenges, underscores the interdependence of these variables, where unfavorable exchange rate movements can impact investor confidence and foreign investment levels. These trends emphasize the importance of managing exchange rates to maintain an attractive environment for foreign direct investment, which, in turn, can contribute to economic stability and growth. Based on the findings of this study the following recommendations are proffered to ensure a stable exchange rate and increase FDI inflow into the country;

i.   Government and the Central Bank should devise policies focusing on the real exchange rate rather than merely nominal values. This approach ensures a comprehensive strategy addressing economic issues, such as import dependency, fostering a more accurate reflection of the country's economic performance.
ii. Government should build up external reserves through a combination of monetary and fiscal policies which crucial for exchange rate stabilization. This will help mitigate exchange rate crises and maintain stability.

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