Impact of Exchange Rate Volatility on Foreign Direct Investment in Nigeria (1980-2022)

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Abstract- The study looks at how foreign direct investment in Nigeria is affected by currency rate volatility. Annual time series data spanning from 1980 to 2022 are used in the investigation. Autoregressive Distributed Lag Models (ARDL) are the estimation method used in this study. Interest rate (IT), exchange rate (EXR), trade openness (TOP), and foreign direct investment (FDI) were the variables considered in the analysis. The ARDL analysis's findings demonstrate that, while exchange rates have a short-term negative and large influence on foreign direct investment, they also have a long-term positive and considerable impact. In the short and long terms, interest rates have a positive and considerable effect on the target variable. In the short and long terms, trade openness significantly and negatively affects foreign direct investment in Nigeria. Additionally, the gross domestic product (GDP) has a long-term positive and large impact on foreign direct investment as well as a short-term negative and major impact. Following the results of the empirical analysis, the following suggestions were made: Analyze the success of legislative initiatives meant to reduce volatility in exchange rates. To stabilize their currencies, improve exchange rate risk management, and provide a more stable investment climate, nations may enact measures like inflation targeting, exchange rate pegs, or currency intervention. Analyze the degree of trade liberalization in the home and host nations. Since businesses that engage in international commerce are frequently better suited to withstand currency changes, a more open trade environment may lessen the impact of exchange rate volatility on foreign direct investment. Additionally, vary your import and export. Think about the difference in interest rates between your home country and the host country. Decisions about investments may be impacted by changes in interest rates. While a large interest rate differential may enhance exchange rate volatility, a higher interest rate in the host nation may draw in more foreign direct investment. Analyze how FDI is affected by GDP growth. Increased foreign investment may result from the host nation's robust economic growth, but investors may be discouraged by the significant volatility of exchange rates. Examine the harmony between GDP expansion and stable exchange rates.

Indexed Terms- Economic Growth, Foreign Direct Investment, Exchange Rate, Trade Openness JEL CLASSIFICATION: D40, F13, F31 and F50

I.   INTRODUCTION

Background

Foreign direct investment (FDI) has a major impact on an economy's growth and development (Adelaja, 2020). It is an out-of-country investment made by an individual or company at a specific time. This type of capital flow is notable for maintaining either effective control over, or at least a substantial amount of influence over, decision-making about a foreign-owned investment, in contrast to portfolio investments. Over the years, Nigeria has employed several macroeconomic tactics to enhance foreign direct investment, as noted by Funyina (2015) and UNDP (2019). Even so, the impact of these steps on achieving sustainable growth in this specific area of capital flow was negligible. In 2014 and 2015, foreign direct investment (FDI) inflows to Nigeria fell from $4.7 billion to $3.4 billion, a 27% decline, according to a survey study conducted by UNCTAD.

Furthermore, the monitoring report on global investment patterns said that the current drop in oil prices will have a significant effect on Nigeria. Furthermore, it has been forecasted that FDI inflows to Nigeria will decline even further in 2023 because to a weak aggregate demand, a brittle global economy, currency rate volatility, and acceleration in a few significant countries. According to UNCTAD, Nigeria received $3.5 billion in foreign direct investment

(FDI) in 2018, a 21% decline from 2017. The global organization linked the country's decreased investment flow to the economic downturn, which had exposed it to several macroeconomic instability (Ayomitunde, Ganiyu, Sokunbi, & Adebola, 2022).

According to the National Bureau of Statistics (NBS), Nigeria has consistently seen a decline in foreign direct investment (FDI) since 2008, the year the global economy crashed. However, the country's rise in foreign direct investment had a mixed history before the financial crisis Okonkwo (2019).

The FDI trend in Nigeria exhibits paradoxical features. Throughout the SAP period, there were notable swings in the country's rate of inflow of foreign direct investment, which peaked in 1993 and declined in 2014. Further empirical study has been made possible by the unpredictable increase in foreign direct investment into Nigeria, which has prompted questions regarding the causes of the instability. However, the country's currency rate volatility and the commodity cycle have been connected to the lack of FDI. Exchange rate volatility is the term used to describe changes in a country's currency value relative to other countries. It is an inevitable consequence of the largest economies throughout the world operating under a floating exchange system (Albagli, E., Calani, M., Hadzi-Vaskov, M., Marcel, M., & Ricci, 2020). Given the country's exchange rate volatility over the past few decades, it makes sense that Nigerians have never gotten over the notion that a stable currency is a sign of a developing economy (Ukemenam, 2017).

As a matter of fact, this situation exemplifies what is known as "exchange rate volatility," which is the term used to describe the unpredictable nature of the exchange rate at any given time. Nonetheless, there was a brief period of relative stability from 1995 and 1997, as the graph above shows.

The study's primary conclusions about the exchange rate trajectory are largely unaffected by this, which was caused by Gen. Sani Abacha's strict currency rate regime. Ceteris paribus, the scenario above makes it evident that, given the volatility of our currency rate, investor confidence cannot be ensured. In light of the aforementioned problems, it is imperative to reassess the ways in which foreign direct investment in Nigeria is impacted by exchange rate fluctuations and offer suggestions for resolving the challenges that result.

Statement of Problem
Many countries made the transition from fixed to floating exchange rate systems when the Bretton Woods system collapsed. Exchange rate volatility has become a major concern for many countries since the implementation of the floating exchange rate system. According to Ehikioya (2019), exchange rate volatility encompasses all changes and swings that affect a currency's value or depreciation.

Investors frequently take exchange rate volatility into consideration when evaluating international investments. Exchange rate volatility affects the costs and amounts of MNCs' inputs and outputs, increasing their competitiveness in the global market (Kumarasamy & De, 2019).

Exchange rate volatility affects the expected returns on foreign direct investments (FDI), which are considered capital transfers. This means that the amount invested may be impacted by both the degree of volatility and the exchange rate (Uddin, Chowdhury, Zafar, Shafique, & Liu, 2019; Asmae & Ahmed, 2019). Exchange rate fluctuation has the potential to encourage or inhibit direct foreign investment.

FDI can affect exchange rate volatility in two ways: first, it can boost productivity in the traded goods sector and lower real exchange rate volatility by balancing the relative prices of traded and nontraded goods; second, FDI inflows increase the capital stock in the host country, which raises the real exchange rate.

FDI increases the existing capital stock and disperses technology. Technology spillovers lead to cheaper non-tradable items and increased output. FDI causes the real exchange rate to decline. Conversely, increased production of non-traded goods increases discretionary income and increases the value of the exchange rate (Biswas & Dygas, 2022).

The purpose of this study is to look into how foreign direct investment in Nigeria is impacted by exchange rate volatility.
Review of Literatures

Exchange Rate Volatility

Exchange rate volatility, which is the tendency of foreign currencies to rise or fall, affects how profitable it is to trade international currencies (Ikechi & Nwadiubu, 2020).

Volatility is the measure of how much and how often these rates change. Exchange rate fluctuations are typical in many different situations, including international investments and business dealings between individuals. It is difficult to stop volatility in these circumstances. Exchange rate volatility can be used to explain fluctuations in an economy's exchange rate. Nigeria's currency rate has a history of regular fluctuations (Ikechi & Nwadiubu, 2020).

The amount spent on total imports and the amount made from exports in international trade are determined by the exchange rate of one country's currency for another. This is the amount that can be exchanged for a different currency note. Exchange rates are always changing. Demand and supply for major currencies fluctuate throughout time. Exchange rate volatility, according to Okechukwu, Mbadike, Geoffrey, and Ozurumba (2019), is the tendency for foreign currencies to gain or lose value, which affects how profitable foreign currency transactions are.

Foreign Direct Investment

The direct financial contribution to a local economy's productive asset made by a foreign company or nation is known as "foreign direct investment" (FDI). A company from one country physically invests in another to establish a plant, according to the traditional definition of foreign direct investment (FDI) (Abbot, Bloch-Johnson, Checlair, Farahat, Graham, Plotkin, & Spaulding-Astudillo, 2018). In view of the fast growth and changes in global investment patterns, the definition has been broadened to include the acquisition of long-term managerial ownership in a company or activity outside the investing firm's native country (Okunlola & Ehimare, 2019). Due to this, it can take many different forms, such as investing in a joint venture or strategic alliance with a local company that involves technical assistance and intellectual property licensing, establishing facilities, or directly purchasing a foreign company (Oluwole & Ushie, 2022).

Foreign direct investment (FDI) is portrayed as a unique occurrence in the current wave of globalization (Baltagi, 2016).

Exchange Rate Volatility on Foreign Direct Investment

In an attempt to reduce their manufacturing expenses and benefit from the low cost of labor and raw materials in the receiving country, foreign investors are moving their capital to other countries. The political and economic environment of the target country, trade policies (such as tax rebates or reductions), and investment incentives are some of the factors that affect foreign direct investment (FDI). In addition, actual exchange rate volatility affects decisions about direct foreign investments. Real exchange rate volatility creates an uncertain environment in which to make investment decisions. Such an atmosphere either leads to "redistribution of resources between sectors and countries" (production flexibility), or "investors delay investment decisions" (postpone, delay hysteresis), according to Azid & Kousar, 2005, p. 749–750.

Approach to Production Flexibility and Export Substitution According to Aizenman (1992), the manufacturer's attempt to increase production flexibility is what motivates foreign direct investment. With this flexibility, the company may decide to change the global production model, but doing so would result in higher production capacity and transportation expenses (Aizenman, 1992, p. 2). Exchange rate volatility is the cause of resource redistribution across sectors and countries, according to the production flexibility idea. Essentially, this strategy is based on the idea that producers would rather invest more since they have to be able to When the host country's exchange rate volatility increases, businesses prioritize the manufacturing flexibility benefit over uncertainty risk. Since exchange rate volatility impedes commerce, there may be a higher level of foreign direct investment (FDI) in certain countries. Multinational firms shift the production of their exported goods to new markets by means of direct capital investments. Multinational firms shift the production of their exported goods to new markets by means of direct capital investments. This reduces costs and increases the market for the product. In order to reduce the amount of uncertainty affecting the price

of the goods they sell, multinational firms are increasing their foreign direct investment (FDI) to offset the loss in trading volumes at the higher volatility markets (Goldberg & Kolstad, 1995, Khraiche & Gaudette, 2013).adjust variable costs (like labor and capital) in reaction to changes in prices caused by changes in exchange rates.

The impact of exchange rate level on foreign direct investment varies depending on the intended use of the produced items. Should the investor desire to produce for the market of the host country, trade and foreign direct investment (FDI) could be considered as alternatives. In this case, the appreciation of the home country's currency increases the purchasing power of local consumers, hence increasing FDI inflows. On the other hand, a drop in the real exchange rate of the receiving country reduces the cost of capital, increasing FDI (Chowdhury & Wheeler, 2018). This method suggests that the increase in FDI is a result of the exchange rate volatility in the host country. This has consequences that will last throughout time.

Empirical Evidence

Oladeji & Musa (2022) examined the relationship between foreign direct investment and the foreign exchange rate in Nigeria. The study made use ECM and cointegration framework, and discovered that there is a favorable long- and short-term impact on foreign exchange due to the relationship between foreign capital inflows and the exchange rate.

Moraghen, Seetanah, and Sookia (2021) investigated the effects of exchange rates and exchange rate volatility on foreign direct investment inflow for Mauritius. The findings demonstrated that while foreign direct investment (FDI) is drawn to countries with dropping real exchange rates, exchange rate volatility has the opposite effect. Furthermore mentioned are the long- and short-term effects of taxation, wages, openness, and literacy levels on foreign direct investment (FDI). The information further demonstrates Mauritius's dynamic FDI.

Iheanachor & Ozegbe (2021) used an autoregressive distributed lag (ARDL) technique to study the effects of exchange rate variations on Nigeria's economic performance. The findings demonstrated that the currency rate, net direct foreign direct investments,

and inflation rate had a cumulative negative impact on Nigeria's economic development. The overall finding of this study indicated that excessive fluctuations in exchange rates are detrimental to Nigeria's economic growth.

Havi (2021) evaluated how Ghana's foreign direct investment inflows were affected by fluctuations in currency rates. Using Ordinary Least Square (OLS) Regression as the approach, the findings demonstrated that the interaction term, the degree of economic openness, and the real exchange rate depreciation do not encourage inflows of foreign direct investment. However, the size and instability of the economy do attract foreign direct investment.

Tan, Xu, & Gashaw (2021) examined the Influence of Exchange Rate on Foreign Direct Investment Inflows: vector error correction models, Granger causality tests, and impulse response tests. The exchange rate and FDI influx have a long-term, stable, and unidirectional causal relationship, according to empirical findings. FDI inflow is discouraged by the RMB's ongoing appreciation versus the USD. Rather than the cost or demand effects, the wealth effect is the mechanism responsible for the long-term association. On the other hand, neither the exchange rate nor the three influencing mechanisms have a major effect on FDI influx in the short term.

Okonkwo, Osakwe, & Nwadibe (2020) investigated exchange rate volatility on foreign direct investment in Nigeria. The methodology employed is Co-Integration Relationship, Error Correction Model (ECM), the results showed that foreign direct investment and the real and nominal exchange rates are positively correlated.

Eregha (2019) explored the effect of exchange rate, its volatility and uncertainty on foreign direct investment (FDI) inflow in West African monetary zone (WAMZ). The methodology employed is panel data methodology, results showed that FDI influx to the zone was positively and significantly influenced by the market size as measured by the real GDP, indicating support for the market-seeking FDI hypothesis. On the other hand, it was discovered that the real GDP growth's track record was not very helpful in attracting foreign direct investment. Nonetheless, it was

discovered that the WAMZ dummy, nominal exchange rate, and degree of openness—three measures of trade policy—were positive and important in promoting FDI flow.

Adokwe, Agu & Ogbonna (2019) examined investigated the effect of exchange rate volatility on foreign direct investment in Nigeria. The methodology employed is generalized autoregressive conditional heteroscedasticity (GARCH) technique, the results showed that foreign direct investment into Nigeria is significantly and negatively impacted by exchange rate fluctuation.

Benson, Eya & Yunusa (2019) examined the effect of exchange and interest rates on foreign direct investment in Nigeria. The methodology employed is Error correction model and the results showed that Foreign Direct Investment (FDI) and Exchange Rate have a favorable association. Given that tcal (7.25891) is larger than ttab (2.101, df = 17) and consistent with presumptive expectations, the link is statistically significant. Given that tcal (12.5639) is greater than ttab (2.101, df = 17), the long-run co-integrating equation demonstrates a statistically significant negative association between interest rate and foreign direct investment. Over time, there was a negative correlation between foreign direct investment (FDI) and inflation. A unit increase in inflation will result in a 23.37% drop in GDP from foreign direct investment. There is statistical significance in this association.

Uzoma, Damian & Orekoya (2019) examined exchange rate volatility and foreign direct investment in Nigeria. The methodology employed is vector error correction model (VECM), outcome of the estimation using Granger Causality Results based on VECM was that there is no correlation, either short- or long-term, between currency rate volatility and net foreign direct investment inflows into Nigeria. The results from impulse response functions and variance decomposition also support this hypothesis.

Theoretical Framework
The Product Life Cycle Theory is the theory used in this investigation.
Product Life Cycle Theory: Developed by Vernon in 1966, this theory explains how production has become more globalized by taking into account a product's life cycle. This hypothesis states that businesses begin by creating and exporting new goods from their nation of origin. Foreign direct investment (FDI) is utilized to set up production facilities overseas as the product ages and demand increases in outside markets. The product life cycle hypothesis emphasizes how FDI decisions are influenced by factors including production cost and market expansion.

Link between Product Life Cycle Theory and foreign Direct Investment
In international trade and business, the Product Life Cycle (PLC) theory and Foreign Direct Investment (FDI) are related ideas that provide important insights into the world economy. The PLC hypothesis, which is mainly credited to economist Raymond Vernon, describes the introduction, growth, maturity, and decline stages that a product typically experiences during the course of its lifetime. This hypothesis is obviously related to FDI in a number of ways:

Stage of Introduction and FDI: A product is first introduced in its domestic market. Companies may use FDI to invest in overseas markets in order to obtain a competitive edge and benefit from economies of scale. To reach new markets and cut manufacturing costs, this may entail creating joint ventures or production facilities.

Growth Stage and FDI: Businesses may engage in FDI throughout the expansion phase when the product becomes more well-known in order to increase production capacity or distribution networks in overseas markets. They are able to expand into new areas and meet the increasing demand thanks to FDI.
Maturity Stage and FDI: During the mature stage, businesses may encounter saturated domestic markets due to increased competition. Opportunities to enter new markets where there is still a significant demand for mature products are provided by FDI. Businesses might also make investments in these markets to broaden their clientele.

Decline Stage and FDI: Companies may use foreign direct investment (FDI) as a tactic to extend a product's life once it enters the decline phase in its home market, even if the product is still in the early stages of its PLC. Businesses may use FDI to reposition or modify their products for new markets or technical breakthroughs.

The PLC idea emphasizes how markets are dynamic, which encourages businesses to use foreign direct investment to look for possibilities. It emphasizes that FDI involves strategic positioning, market access, and longevity in addition to cost reduction. Comprehending the relationship between the PLC theory and foreign direct investment (FDI) enables companies to make well-informed decisions on international expansion and product life cycle management, so enhancing their competitiveness and international growth.

II. METHODOLOGY

Research Design
For the purpose of this investigation, time series annual secondary data were used. The time series was chosen since the study's data was collected throughout time with the goal of identifying the factors that contribute to insecurity in Nigeria. Nigerian international commerce was examined in relation to exchange rate volatility using the autoregressive distributed lag model (ARDL). Trade was the dependent variable in the study, and the independent variables were the exchange rate, balance of payments, and economic growth. Over the course of 43 years, from 1980 to 2022, data on the variables were gathered from the World Development Index and the Central Bank of Nigeria.

Because one of the study's goals is to investigate how exchange rate volatility affects foreign direct investment in Nigeria, a model that accurately depicts the link between exchange rate volatility and foreign direct investment in Nigeria must be specified.

The Oladeji & Musa (2022) model was modified for this study's needs. As a result, the link is described below:

FDI*= f (TOP, RGDP, K, Z) …………………………………………..(3.2)

Where;
FDI* = Foreign Direct Investment
TOP = Trade openness
RGDP = Real Gross Domestic Product
K = Stock of Capital
Z = other macroeconomic variables that can also influence foreign direct investment inflows

The other macroeconomic variables such as exchange rate volatility, external reserves, inflation rate, exchange rate etc. are represented with Z variable. From the empirical literature and our theoretical framework, we adapt our model by modifying the FDI model specified above in equation 3.2 as restated in equation 3.3.

F* = f (TOP, RGDP, K, Z) …………………………... (3.3)

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

FDI =f(INTR, EXTR, TOP, GDPr)………………………………(3.4)

We shall further transform this mathematical model into econometric equation:

$FDI = \beta_0 + \beta_1 INTR + \beta_2 LogTOP + \beta_3 EXTR + GDPr + \mu t$ …………… (3.5)

where;
FDI = Foreign direct investment
INTR = Real Interest rate
TOP= Trade openness
EXR = Exchange rate
GDPr = Gross domestic product growth rate

Estimation Techniques
The data was analyzed using Autoregressive Distributed Lag models (ARDL) of regression analysis. This technique was used to examine the impact of the independent variables on the dependent variables in both the short and long term. The amount of variation in the dependent that was explained by the independent variables was calculated using the adjusted form of our coefficient of determination (R^2) and its value. Similarly, the F-test was used to assess the model's combined significance, and the T-test was used to assess the significance of each independent variable separately.

III. DATA PRESENTATION AND ANALYSIS

Descriptive Statistics

	LNFDI	EXR	INTR	LNTOP	GDPR
Mean	21.10117	108.0868	0.453578	3.355795	3.041468
Median	21.35137	111.2313	4.310292	3.518084	3.647187
Maximum	22.90267	401.1520	18.18000	3.975523	15.32916

Minimum	19.05813	0.617708	-65.85715	2.212206	-13.12788
Std. Dev.	1.126896	109.9700	14.25917	0.491178	5.385440
Skewness	-0.040804	0.978891	-2.717477	-0.983916	-0.819168
Kurtosis	1.841711	3.189257	12.91104	2.992983	4.620614
Jarque-Bera	2.303334	6.609079	218.2694	6.615375	9.072163
Probability	0.316109	0.036716	0.000000	0.036601	0.010715
Sum	865.1480	4431.558	18.59670	137.5876	124.7002
Sum Sq. Dev.	50.79581	483736.1	8132.960	9.650245	1160.118
Observations	43	43	43	43	43

Source: Authors' Computation from E-views 11, 2023
The summary statistics for each of the variables under consideration—foreign direct investment (FDI), interest rate (INTR), exchange rate (EXR), trade openness (TOP), and economic growth rate (GDPr)—are shown in Table 3.1 above. Every relevant variable had forty-three observations. The variables with the highest mean values are EXR, TOP, GDPr, FDI, and INTR, in that order. The median is the midway value obtained by sorting observations in either ascending or descending order, whereas the mean value of each variable represents the average of the data. The average value of all the variables likewise lies between the highest and lowest values. With the exception of TOP, which has a kurtosis value of less than three, all the variables showed signs of being mesokurtic. Additionally, the Jarque-Bera test probability showed that all the variables—aside from TOP—are normally distributed. With the exception of TOP and GDPr, all the variables, according to the skewness test, are skewed since their values are greater than one (1).

Unit root test
The results of the unit root tests for the variables looked at in this study utilizing the Augmented Dickey Fuller and Phillip Perron procedures are shown in Table 3.2. In order to select the suitable analytic technique and prevent a misleading or erroneous regression result, the unit root test basically looks at the stationarity qualities of the variables of interest. The stationary qualities of the variables appear to indicate a mixture of I(0) and I(1) in the table, which supports the applicability of the ARDL bounds technique of the co-integration test in this investigation.

Table 4.2 Unit root test Result

Variables	ADF-Statistic	Critical value 5%	Order of integration	Interpretation
lnFDI	-7.303125	-2.935001	I(1)	Stationary at 1st difference
INTR	-4.748742	-2.933158	I(0)	Stationary at Level
lnTOP	-8.311320	-2.935001	I(1)	Stationary at 1st difference
EXR	-4.241596	-2.935001	I(1)	Stationary at 1st difference
GDPr	-12.08960	-2.935001	I(1)	Stationary at 1st difference

Source: Authors' Computation from E-views 11, 2021
The summary of the results of the Augmented Dickey Fuller and Phillipperon Unit root test is displayed in Table 3.2 above. It displays the degree of variable integration. The stationarity of the individual unit root test is calculated using Nigerian data spanning from 1980 to 2022. The table shows that while interest is stationary at first difference (1), all other variables (foreign direct investment, exchange rate, trade openness, and gross domestic product growth rate) are stationary at first difference (0).

ARDL-Bounds Co-Integration Test
The Bound Test co-integration analysis result is shown in Table 3.3. The F-statistic, 12.130930, is clearly higher than the upper bound critical values of 10%, 5%, 2.5%, and even 1%, as can be seen in the table. This outcome indicates that we can move forward with estimating the long- and short-term effect

relationships between the target variable and the features in our chosen model. It also validates the presence of a long-term relationship or co-movement among the variables under consideration.

Bounds Test Co-Integration Result

F Test:				
F-statistic	Degree of Freedom	Level of Significance	Pesaran et al., (1999) a I(0) Bound I(1) Bound	Remark
12.184156	4	10%	2.45 3.52	Co-integrated
		5%	2.86 4.01	
		2.5%	3.25 4.49	
		1%	3.74 5.06	

Source: Authors' Computation from E-views 11, 2023

ARDL Short-run Analysis

The Short-Run Dynamic and the Error Correction

ARDL (1, 2, 0, 2, 0) lag selection based on Akaike Information Criteria				
dependent Variable: Foreign direct investment ((FDI))				
Variable	Coefficient	Std. Error	t-statistic	Prob.
ECM(-1)	-0.608965	0.140809	-4.324751	0.0004
D(EXR(-1))	-0.015631	0.006276	-2.490655	0.0222
D(INTR)	0.027460	0.011738	2.339452	0.0304
D(INTR(-2))	-0.028948	0.008671	-3.338298	0.0035
D(INTR(-3))	0.021317	0.008732	2.441213	0.0246
D(LNTOP(-1))	-1.878553	0.504437	-3.724059	0.0014
D(GDPR(-3))	-0.072250	0.022191	-3.255758	0.0042

Source: Authors' Computation from E-views 11 2023

The computed model's short-run dynamic and error correction factors are shown in Table 3.4. The long-run co-movement among the variables under consideration, as shown in table 4.4, is confirmed by the ECM (-1) coefficient of -0.608965, which suggests that the rate at which these variables adapt to the equilibrium position is 60.89% yearly. The fact that the ECM (-1) coefficient is negative further supports the model's statistical soundness and suitability for forecasting and prediction.

The findings showed that, in the short term, foreign direct investment is significantly and negatively impacted by exchange rates with a one-period lag. Furthermore, in the short term, interest rates at current value have a positive and significant impact on foreign direct investment; similarly, in the second and third periods, interest rates have a negative but significant impact and a positive and significant impact, respectively, on foreign direct investment in Nigeria. Similarly, in the short term, trade openness at one period lag has a negative but significant influence on foreign direct investment; similarly, in the third period lag, the gross domestic product growth rate (D) (GDPGR (-3)) has a negative but significant impact on foreign direct investment.

ARDL Long Run Analysis

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR	0.003861	0.002028	1.904006	0.0722
INTR	0.053169	0.039032	1.362170	0.1891
LNTOP	-0.220208	0.454653	-0.484344	0.6337
GDPR	0.184059	0.078934	2.331821	0.0309

	21.080721	1.349514	15.620977	0.0000
C				

ARDL Diagnostic Tests

Type	Diagnostic Test	F-stat.	Probability
Breusch-Godfrey LM Test	Serial Correlation	0.356760	0.7030
Breusch-Pagan-Godfrey Test	Heteroskedasticity	1.880384	0.0928
Ramsey RESET Test	Specification	0.739022	0.3968
Jarque-Bera Test	Normality	0.172731	0.917257

Source: Authors' Computation from E-views 11, 2023

The results of the different diagnostic tests carried out to confirm the accuracy of the regression findings of our dynamic model are shown in Table 3.6. The tests consist of the Jarque-Bera test for normality, the Ramsey RESET test for model specification, the Breusch-Godfrey test for serial correlation, and the Breusch-Pagan-Godfrey test for heteroskedasticity. For each category of diagnostic tests, the F-statistics and probability obtained indicate positivity since they all point to the rejection of the null hypothesis. In other words, the results of the serial correlation test indicate that there is no serial correlation, which is an econometric issue. The results of the Ramsey REST Test validate the goodness of the model specification as previously established, the BPG Test demonstrates that the model is not homoskedastic, and the Jarque-Bera test indicates that the variables are normally distributed given that their probability value is greater than 0.05 or 5% level.

IV. DISCUSSION OF RESULTS

This study's primary goals are to investigate how exchange rate volatility affects foreign direct investment in Nigeria. The analysis's conclusions showed that Nigeria's economic growth is positively and significantly impacted by the exchange rate. The results of Okonkwo, Osakwe & Nwadibe (2020), Benson, Eya & Yunusa (2019), and Oladeji & Musa (2022) all indicate that exchange rates have a positive and significant impact on foreign direct investment, which is consistent with the beneficial impact of exchange rates on foreign direct investment. This means that in order to explain foreign direct investment, exchange rates are important.

The work of Moraghen, Seetanah, and Sookia (2021), whose findings demonstrated that interest rates had a favorable impact on foreign direct investment on the short-run, is consistent with the positive short-term impact of interest rates from the ARDL. This means that interest rates have a major role in explaining foreign direct investment and will, in the near term, have a favorable effect on it.

The ARDL's analysis of the short-term benefits of trade openness is consistent with Eregha's (2019) research, which found that interest rates have a short-term beneficial effect on foreign direct investment. This means that interest rates have a major role in explaining foreign direct investment and will, in the near term, have a favorable effect on it.

Policy Implication of Findings

The exchange rate's favorable effect on foreign direct investment demonstrates the exchange rate's importance to the Nigerian economy. This implies that in order to draw in foreign direct investment, the currency rate must remain steady and predictable. The government should strive to prevent excessive volatility or abrupt devaluations that can discourage foreign investors, according to one policy conclusion. Stability-promoting exchange rate measures can be helpful to implement. Effective exchange rate management also involves taking steps to stop the overvaluation or undervaluation of a currency. Overvaluation of the local currency might reduce export competitiveness and deter foreign direct investment. Maintaining a competitive exchange rate requires active exchange rate management, which is a policyimplication.

Maintaining a stable and predictable interest rate environment is crucial to attracting foreign direct investment (FDI), as interest rates have a positive and considerable impact on FDI in the short term. The government should strive to prevent large volatility or abrupt increases in interest rates that would discourage foreign investors, according to one policy conclusion. It can be advantageous to put stable interest rate

policies into effect. Additionally, the beneficial effect of interest rates on FDI can be complemented by a competitive and stable currency rate. To foster a climate that is conducive to investment, governments ought to synchronize their policies on interest rates and currency rates.

Since trade openness influences foreign direct investment in the short term in a positive and significant way. Governments should keep pursuing trade liberalization policies in order to maximize the benefits of trade openness on foreign direct investment. To make sure that foreign investors have unrestricted access to the local market, this involves lowering trade obstacles, tariffs, and non-tariff barriers. Additionally, governments ought to fund the development of infrastructure in order to encourage greater trade and FDI. To promote the flow of products and services, this entails constructing and modernizing ports, logistics facilities, and transportation networks.

CONCLUSIONS AND RECOMMENDATIONS

The effect of currency rate volatility on foreign direct investment in Nigeria is investigated in this study. The results of this study demonstrate that a number of factors, including interest rates, trade openness, exchange rates, and economic growth, have a significant impact on foreign direct investment. Of these, exchange rates are one of the biggest drivers of foreign direct investment. The analysis demonstrates that the exchange rate is advantageous and still a crucial instrument for attracting foreign direct investment to Nigeria. Furthermore, a clear correlation is observed between foreign direct investment in Nigeria and the explanatory factors (exchange rate, interest rate, trade openness, and economic development).

Analyze the success of legislative initiatives meant to reduce volatility in exchange rates. To stabilize their currencies, improve exchange rate risk management, and provide a more stable investment climate, nations may enact measures like inflation targeting, exchange rate pegs, or currency intervention.

Analyze the degree of trade liberalization in the home and host nations. Since businesses that engage in international commerce are frequently better suited to withstand currency changes, a more open trade environment may lessen the impact of exchange rate volatility on foreign direct investment. Diversify your import and export as well.

Think about the difference in interest rates between your home country and the host country. Decisions about investments may be impacted by changes in interest rates. While a large interest rate differential may enhance exchange rate volatility, a higher interest rate in the host nation may draw in more foreign direct investment.

Analyze how FDI is affected by GDP growth. Increased foreign investment may result from the host nation's robust economic growth, but investors may be discouraged by the significant volatility of exchange rates. Examine the harmony between GDP expansion and stable exchange rates.

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