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Article

Macroeconomic Variables and Foreign Direct Investment in Nigeria

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Abstract: This study investigates the association between macroeconomic variables and foreign direct investment in Nigeria from 1980-2024. The variables used are foreign direct investment, exchange rate, gross domestic product, inflation rate, interest rate and trade openness. The techniques applied for the estimation is the Ordinary least square of multiple regression analysis, unit root, Co-integration and error correction mechanism. The result of the study indicated that some variables had positive link while others had negative association between macroeconomic variables and foreign direct investment in Nigeria. Variables like gross domestic product and exchange rate are statically significant at 5 per cent level of significance except interest rate, inflation rate, interest rate and trade openness which had negative sign as was expected. The result of the R2 is 61% indicating that the link between macroeconomic variables and foreign direct investment in Nigeria is 61 per cent. The study concludes that macroscopic policies should geared toward a better improvement in the macroeconomic environments to enhance and utilize the foreign direct investment inflow in the economy of Nigeria. Government should also be able develop sound policies that would strengthen or lure foreign direct investment into Nigeria by paying more attention to the identified macroeconomic policy variables that can attract its inflow. The study recommends a favourable interest rate policy so as to enhance the entire economy.

Keywords: Exchange Rate, Foreign Direct Investment, Inflation Rate, Interest Rate

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Introduction

Foreign direct investment has been observed to be an aspect of globalization through which growth of economies could be actualized. It has been observed by scholars that foreign direct investments contribute to growth in a substantial manner because such investments are more stable than other forms of capital flows. Foreign direct investment is not just a transfer of ownership as it usually involves the transfer of factors complementary to capital, including management,

technology and organizational skills [1]. Foreign direct investments allow for international capital flows which were prompted by the need for foreign capital to support domestic resources in growth and development process of less developed and developing countries of the world in addition to bridge the gap between savings and investments or capital requirements of these economics [2][3]. There is no doubt that the economically developing as well as underdeveloped countries are dependent on the economically developed countries for financial assistance that would help them to achieve some amount of economic stability. The economically developed countries on their part can help these countries financially by investing in these countries [4]. This financial assistance can be channelled into various sectors of the economy.

Recent events have shown that Foreign Direct Investment is highly needed to bridge the gap between savings and investments and as well encourage economic growth in Nigeria. It was observed that the flows of FDI globally increased continuously during the 1980s and 1990s with the highest and sharpest growth in the late 90s. The flows increased reaching a peak of $1,411.4 billion in 2000 from $58 billion in 1985. However, it took a downward trend between 2001 and 2003 reaching a low level of $564.1 billion in 2003. According to Akimulegun, this was the experience of both developed as well as developing economies of the world [5]. UNCTAD (2009) showed that Nigeria is one of the few countries that have consistently benefited from FDI inflow to Africa and ranked as second recipient after Angola in 2001 and 2002. Nigeria share of FDI inflow to Africa averaged around 10% from 24.19% in 1990 to a low level of 5.88% in 2001 up to 11.65% in 2002.Given her natural resource base and market size, is one of the economies in Africa with high demand for goods and services and has attracted foreign direct investment over the years. Kabir observed that the amount of FDI inflows into Nigeria rose steadily from $2.23 billion in 2003 to $5.31 billion in 2004 (representing 138% increase) $9.92 billion in 2005 (87% increase) but declined slightly to $9.44 billion in 2006 [1][6].

Correspondingly, reports had it that foreign direct investments in Nigeria averaged $1348.23 million from 2007 until 2016 reaching an all-time high of $3084.90 million in the fourth quarter of 2012 and a record low of $501.83 million in the fourth quarter of 2015 [7]. This increased by $673.95 million in the second quarter of 2016. The latest value for FDI, net outflows (BOP, current us) in Nigeria was $1,601,233,000 as of 2014. Over the past 35 years, the value for this indicator has fluctuated between $1,601, 233,000 in 2014 and #27,000,000 in 1982 [8]. FDI forms a relatively small percentage of the nation's Gross Domestic Product (GDP), however, making up of 7.56% in 1992, increased to 41.74% in 1996, decreased to 37.38% in 2003 and subsequently moved from 2004 to 2007 when it peaked at 87.11%. On the whole, it formed about 46.10% of the GDP over the period under consideration [7].

Foreign direct investment (FDI) can play a key role in boosting global capital flows, which are essential for boosting domestic resources in developing nations' growth and development processes and bridging the savings and investment gaps. It is clear that developing and less developed nations rely heavily on the financial support of their more developed counterparts in the form of FDI inflows that would help them reach and maintain a certain level of economic stability [9][10]. By making investments in these nations, economically developed nations may support and strengthen these less developed and growing economies [11]. Through collaboration with the host nation, this financial aid can be directed toward various economic sectors. It is the responsibility of the host nation to provide an environment that is conducive to investment and free from risks and unfavorable economic regulations that can deter potential investors. It is also crucial to keep in mind that domestic private sector companies frequently lack the financial resources to carry out certain types of in their nation and frequently rely heavily on foreign businesses or individuals to complete these types of investments, which require significant capital outlay [12].

Apart from the need for large capital investments to finance specific projects or ventures, indigenous investors favor investments that produce income quickly and may even require less cash; foreign direct investment is necessary in this situation [13]. The institution of foreign direct investment has a number of positive effects on an economy, including increased capital inflows that

will strengthen the host nation's balance of payments, an increase in exports, a swift transfer of technology, new management techniques, and an increase in the employment rate [14] pointed out that foreign direct investment has been booming in developing nations since 1990, helping to encourage industrialization, growth, and development. In order to understand the underlying forces of international business in the worldwide economy in the years leading up to the millennium, it is stimulating to parallel the growth trends of trade and investment. Foreign direct investment is on the upsurge, which supports development by increasing productive resources, bridging the technical divide, and overcoming capital constraints. According to previous research, nations with minimal investment risk and macroeconomic stability, including stable prices, rapid GDP growth, and little fluctuation in exchange rates, and moderate interest rates, are more appealing to international investors [15].

Theoretical Literature Reviewed

Eclectic Theory

Dunning postulated it and asserts that corporations participate in foreign direct investment when a location's characteristics or physiognomies are combined with ownership and internationalization benefits to make the area necessary for investment [16]. Nigeria's strong connectivity with the majority of the continent and the rest of the world has made it a popular location for foreign direct investment. This is because of her geographic location, particularly the Apapa Seaport and oil-producing zones, which are favoured by the majority of investors as trustworthy and secure in all other facets. Given the costs involved, transportation is one of the crucial elements of business.

Empirical Literature Reviewed

Akinleye and Adeyemi study examine foreign direct investment in Nigeria and macroeconomic issues [17]. This study expands on previous research by using short- and long-term analytical methods to show how macroeconomic factors impact foreign direct investment in Nigeria. This study used macroeconomic data to examine Nigerian FDI inflows and outflows from 1986 to 2023. The ordinary least squares (OLS) model estimated that GDP, exchange rate, and interest rate influenced gross fixed capital creation in the short term, but inflation and money supply did not influence gross fixed capital creation in the short term. In the short run, inflation, GDP, and exchange rates correlated positively with gross fixed capital creation, whereas money supply and interest rates correlated negatively. Short run macroeconomic variables impact foreign direct investment in Nigeria either negligibly or significantly. Foreign direct investment are essential to macroeconomic growth, hence the government should maintain price stability and a stable macroeconomic climate. Nigeria needs a strong currency policy to attract foreign direct investment by keeping exchange rates stable, and monetary policy should decrease interest rate fluctuations. Nasiru and Aminu study examined some selected macroeconomic variables and foreign direct investment in Nigeria between 1992 to 2022 using annual time series data [18]. The data was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin 2023. The study used the Autoregressive Distributed Lag (ARDL) Technique to analyze the data. Findings showed that certain macroeconomic variables play crucial roles in attracting FDI. Specifically, Gross Domestic Product (GDP), Exchange Rate, Government Expenditure and Monetary Policy Rate are identified as key drivers of FDI in the long run.

The findings suggest that economic growth, domestic investment, and a skilled labour force are essential for creating an appealing investment environment. Conversely, the negative impact of the inflation rate highpoints; the rationale behind currency stability to kindle investor confidence. In the short run, however, the study identifies contrasting effects, with variables such as GDP and inflation negatively impacting FDI. This divergence between short run and long run effects points to the complexity of FDI determinants in Nigeria and suggests that immediate economic conditions can temporarily deter foreign investment, even when long-term prospects are favourable. The

causality analysis further reinforces the interconnectedness between FDI and macroeconomic variables, particularly the bidirectional relationships with government expenditure and exchange rates. These findings imply that FDI is influenced by broader economic conditions, making it important in Nigeria's economic prosperity. It is recommended that the policy makers should prioritize policies that stimulate FDI. This includes investing in infrastructure, promoting industrialization and supporting areas with exalted growth potential to include technology and services. Nwagu study examines the effect that specific macroeconomic factors have on the amount of foreign direct investment (FDI) flowing into Nigeria [4]. The ex post facto research design was adopted, and it used exchange rate, inflation rate, monetary policy rate (MPR), and gross domestic product growth (GDP) rate as the macroeconomic variables. The quantity of inflow between 1986 and 2020 was made up of FDI (dependent variable). Because the model variables were integrated in a mixed order of both level and first difference, the autoregressive distributed lag (ARDL) technique was used.

The selected macroeconomic variables and FDI were bound by a long-run connection, according to the results of the ARDL bounds test for co-integration. The calculated short-run coefficients showed that GDP growth rate and monetary policy rate were the primary macroeconomic variables that considerably increased FDI inflow in Nigeria, whereas inflation and exchange rate were the major macroeconomic variables that significantly decreased FDI inflow. In the long term, the GDP growth rate and the exchange rate had a beneficial influence on FDI influx, whereas the monetary policy rate had a large negative effect. According to these empirical findings, it is advised that Nigeria's monetary authorities should support strong GDP growth, exchange rate stability, and efficient monetary policy rates in order to draw FDI into the country and create efficient foreign exchange policies that will attract foreign investors. Ugonna and John empirically investigated the association between FDI and economic growth in Nigeria between 1990 and 2021 based on the traditional FDI concept [11]. While oil-related foreign direct investment (OFDI) and non-oil related foreign direct investment (NFDI) were used as stand-ins for the study's explanatory variable, FDI and GDP were used as stand-ins for the study's dependent variable, which was economic growth in Nigeria. The Central Bank of Nigeria's statistical bulletin served as the source for the study's secondary data.

The analysis employed a stationarity test, the ordinary least squares (OLS) method was used for the short-run analysis, and the Johansen co-integration test was used for the long-run study. The results are as follows: NFDI and economic growth in Nigeria have a positive and negligible association, but OFDI and economic growth in Nigeria have a negative and negligible link. A positive and strong correlation exists between FDI and economic growth in Nigeria. The results highlight that although there is a long-term correlation between FDI and economic growth in Nigeria, there is no direct causal linkage between the two. FDI has a big impact on Nigeria's economic growth in the short run. Lastly, the report made a number of recommendations to aid the expansion of Nigeria's economy. Siklar and Sikla examined the effects of FDI on the macroeconomic dynamics of the Turkish economy [19]. The outcomes of the economic theory show that FDI has a favorable impact on domestic investment volume and economic growth. The findings also support the tenet of economic theory that local and international investments complement one another. It is acknowledged that FDI increased pricing pressure to some extent, but the monetary authority's measures offset this. While FDI does not considerably contribute to the decline in unemployment, it does greatly increase imports, particularly of capital goods. Said and Umar found that the majority of African nations experience difficulty attracting FDI, and Nigeria in particular is one of these nations.

The impact of foreign direct investment on macroeconomic variables (exchange rate, inflation rate) in Nigeria was empirically explored in this study over a five-year period (2017– 2021). The generalized autoregressive conditional heteroscedasticity (GARCH) model was used in the study. A pre-diagnostic is the first condition for estimating GARCH, and this is where the econometric study began. The properties of the time series variables were investigated and tested using the augmented

Dickey–Fuller (ADF) unit root test. The outcome of this experiment showed that the variables of foreign direct investment, currency rate, and inflation rate were stationary at either level I or at first difference I(I) (0). The GARCH model found that while inflation has a negative impact on exchange rates, FDI has a favorable impact. Based on this, the study suggested that in order to attract the FDI required to boost growth in macroeconomic variables, Nigeria should implement a proper regulatory framework that will be conducive to conducting business. Adebayo et al. used annual data ranging from 1981 to 2018 to examine the associations between FDI inflows and a few selected macroeconomic metrics (exports, gross capital creation, trade openness, inflation, and economic growth) [12]. Nigeria was used as a case study. The study employed the ARDL technique to capture the correlations between FDI inflows and their determining factors. Techniques for wavelet coherence were also used. The main contribution of wavelet coherence is the capacity to collect information on dynamic correlation and/or causality between economic variables at different frequencies and over different time scales. The fully modified ordinary least squares (FMOLS) and the dynamic ordinary least squares (DOLS) were also utilized as a robustness check for the ARDL long-run estimation. The findings of the ARDL long-run estimate demonstrate that exports and trade openness have a positive impact on FDI inflows.

The findings of the FMOLS and DOLS confirmed those of the ARDL. The results of the wavelet coherence-based causality and wavelet correlation approaches offer additional proof in favor of the ARDL technique. To the best of our knowledge, this is the first study to analyze these dynamics using wavelet coherence and wavelet correlation. Policy recommendations were made as a result of these findings. Ukachukwu and Odionye examined the effects of specific macroeconomic factors on foreign direct investment in Nigeria from 1981 to 2017 [7]. To examine the immediate and long-term impacts of the selected factors on foreign direct investment, the researchers utilized the ARDL bounds co-integration model. The findings demonstrated a long-term relationship between foreign direct investment and specific macroeconomic variables in the country. The ARDL model's findings demonstrated that over the long and short terms, both the foreign exchange rate and the price of crude oil had a significant positive impact on foreign direct investment in the nation. The outcome also showed that in the short and long terms, inflation had a considerable negative influence on foreign direct investment. The findings also showed that while real gross domestic product had a considerable short-term beneficial impact on foreign direct investment, its long-term impact was modest. The researchers suggested that the government should create policies to promote price stability and stability in the macroeconomic environment in light of the empirical findings. Meftah and Nassour looked at the variables that affect FDI [20].

The study demonstrates that there is a long-term causal relationship between exchange rates and inflation with FDI using the vector error correction model. However, there are no factors that have an immediate impact on FDI. Additionally, the Granger causality test demonstrates that GDP and FDI have a causal relationship, whereas other variables do not. The findings of this study have significance for how policymakers should increase the flow of FDI by paying attention to macroeconomic factors. Emenuga looked at the effects of macroeconomic factors on the flow of FDI into Nigeria from 1986 to 2017 [1]. The CBN Annual Report served as the source for information on foreign direct investment (FDI), gross domestic product (GDP), government size (GOVT), exchange rate (EXR), inflation rate (INF), and interest rate (INT). Techniques for estimating the error correction model and the ARDL co-integration bounds test were used. The results of the ARDL showed that FDI in Nigeria was highly influenced by the currency rate, interest rate, GDP, and government size. The study found a long-term association between macroeconomic factors and foreign direct investment in Nigeria and suggested that the Nigerian government should support economic policies that would draw in more foreign direct investment. Emudainohwo used time series 1981 to 2016 to assessed how macroeconomic indicators affecting FDI into Nigeria [21]. A long term relationship between the variables was discovered by the study using the FMOLS. The study revealed that FDI inflows were positively impacted by market size, trade openness, and total government spending, but negatively and negligibly by the REER.

Additionally, the study discovered that the only factors that could statistically explain FDI inflows into Nigeria were total government spending and trade openness. According to the study, a portion of government spending should go toward establishing robust institutions and infrastructure as well as implementing policies that would improve Nigeria's exchange rate. Ndugbu, Duruechi and Ojiegbe study examined macroeconomic policy variables in relation to foreign direct investments (FDIs) in Nigeria [8]. Macroeconomic theory of foreign direct investments posits that FDIs largely depend on changes in the macroeconomic environment. The environment consists of GDP, real exchange rate, openness of the economy etc., which are some of the factors that affect the FDIs flows in a country. In Nigeria, Various macroeconomic policies and reforms have been embarked upon by government aimed at attracting FDI into the country, but these efforts have appeared to be futile going by the low and unsteady behaviour of the level of foreign direct investments. This has become a source of worry to all concerned. Therefore, this work was set out to investigate the impact of macroeconomic policy variables on FDI in Nigeria. Data for the study were collected from the Central Bank of Nigeria statistical bulletin (1986 – 2016). Vector Auto Regression (VAR) analysis using e-view 9.0 version was used to analyze the data. Variables examined were exchange rate, inflation rate, interest rate, real gross domestic product and trade openness. Findings revealed that though all the variables put together impact on FDI, specifically, interest rates, inflation rates and RGDP (economic growth) have significant positive impact on FDI in Nigeria. Therefore, Government should evolve sound policies that would strengthen the attraction of FDIs in Nigeria by paying more attention to the identified macroeconomic policy variables. The variables have shown to be a vital tool that could be used to encourage the inflow of FDI into the country.

Methodology

This study methodology is based on econometric analysis in order to ascertain the relationship between some macroeconomic variables and foreign direct investment (FDI) in Nigeria from 1980–2024 (annual quotation). Source of data: The secondary data for the foreign direct investment, exchange rate, gross domestic product, inflation rate, interest rate and trade openness were obtained through official macroeconomic databases and statistical publications. The first step in the study is specifying a functional and econometric model for FDI as a function of a set of main macroeconomic variables. The model was borrowed from empirical literature but adjusted to include variables relevant to the Nigerian macroeconomic environment. The time series properties of the variables were checked to prevent spurious regression outcomes before estimation. Our unit root test results, using Augmented Dickey–Fuller (ADF), help in confirming data series stationarity and order of integration of various variable. After the stationarity test, the Johansen co-integration technique was used to test long-run equilibrium relationship among the variables. When co-integrated evidence was available, Error Correction Mechanism (ECM) was estimated to capture short-run dynamic and speed of adjustment from short-run disequilibrium to long-run equilibrium. The Ordinary Least Squares (OLS) multiple regression method was subsequently used to estimate the structural relationship between foreign direct investment and the chosen macroeconomic determinants. The OLS estimation sheds light on the size, sign, and statistical significance of the effects of all explanatory variables on FDI. Last but not the least, model diagnostics and stability tests (Appendix 1: Recursive residual and CUSUM tests) are performed to confirm the reliability and stability of the estimated model during the study period. Such methodological framework provides an overall short-run and long-run assessments of the relationships between macroeconomic drivers and foreign direct investment in Nigeria.

Result and Discussion

Model Specification

This study adopted the model Nasiru and Aminu who analyzed some selected macroeconomic variables and foreign direct investment (FDI) in Nigeria [18]. The variables used are net inflow of

investment from foreign entities into Nigeria (GFDI), total spending by a government on public services, infrastructure, and economic development (GOVE), interest rate that a nation's central bank sets to control inflation, borrowing, and the money supply (MPR), value of the country's currency against the weighted average of foreign currencies, after adjusting for inflation (REER) and rate at which prices for goods and services generally increase, gradually decreasing purchasing power (INFL).

The functional relationship is given as:

$$gfdi = f(gove, mpr, reer, \inf l).....(1)$$

Where;

f = Functional Relationship

gfdi = net inflow of investment from foreign entities into Nigeria at time "t".

gove =total spending by a government on public services, infrastructure, and economic development at time "t".

mpr = interest rate that a nation's central bank sets to control inflation, borrowing, and the money supply at time "t".

reer = value of the country's currency against the weighted average of foreign currencies, after adjusting for inflation.

infl = rate at which prices for goods and services generally increase, gradually decreasing purchasing power at time "t".

The econometric form of the model is stated as

$$\text{gfdi}_t = \beta_0 + \beta_1 gove_t + \beta_2 mpr_t + \beta_3 reer_t + \beta_3 \inf l_t + +\mu_t.....(2)$$

The present study replicates the above model with some modifications. The model specifications for this study is stated as

$$\text{fdi} = f(exr, gdp, ifr, itr, top).....(3)$$

Where

Fdi=foreign direct investment, exr = exchange rate, gdp = gross domestic product, ifr = inflation rate, itr = interest rate and top = trade openness.

The econometric form of the model is stated as

$$\text{fdi}_t = \beta_0 + \beta_1 exr_t + \beta_2 gdp_t + \beta_3 ifr_t + \beta_4 itr_t + \beta_5 top_t + \mu_t.....(4)$$

Where

Fdi=foreign direct investment at time "t", exr = exchange rate at time "t", gdp = gross domestic product at time "t", ifr = inflation rate at time "t", itr = interest rate at time "t and top = trade openness at time "t", $\sum_1 t$ =Error term, $\beta_0 =$ Intercept.

The ECM model is represented as

$$\Delta\text{fdi} = \beta_0 + \sum_{t=1}^{p} \beta_1 \Delta exr_{t-1} + \sum_{t=1}^{p} \beta_1 \Delta gdp_{t-1} + \sum_{i=1}^{q} \beta_2 \Delta ifr_{t-1} + \sum_{i-1}^{q} \beta_4 \Delta itr_{t-1} + \sum_{i-1}^{q} \beta_5 \Delta top_{t-1} + \sum_1 t).....(3)$$

Where,

β_0 = constant parameter to be estimated, $\beta_1 - \beta_5$ are short run parameter, $\alpha_1 - \alpha_5$ are long run parameter, D = 1st difference parameter and $\sum_1 t$ =error term , Aprior expectation; $\beta_1 - \beta_5 > 0$.

Analytical Techniques

The method engaged Augmented Dickey Fuller unit root test and applied the Co-integration

test to establish if the variables were Co-integrated or not and have a long run relationship or not. The Error Correction Mechanism (ECM) test was carried out to ascertain if the variables long-run association would be tied to its short run dynamics. Lastly, the Ordinary Least Square and the stability tests were conducted.

Unit Root Test

Table 1. The Augmented Dickey Fuller (ADF) unit root test is use to establish the stationarity of the time series data used in the study.

Variables	Levels		First Difference		Order of Integration	-value
	ADF Statistics	5% Critical Value	ADF Statistics	5% Critical Value		
FDI	-2.926602	-3.515523	-5.434745	-3.518090	1(1)	0.0000
EXR	-3.757572	-3.518090	-6.454744	-3.520787	1(1)	0.0000
GDP	-3.757572	-3.518090	-6.454744	-3.520787	1(1)	0.0000
IFR	-3.757572	-3.518090	-6.502407	-3.520787	1(1)	0.0000
ITR	-3.757572	-3.518090	-5.906808	-3.536601	1(1)	0.0000
TOP	-3.577074	-3.515523	-7.349251	-3.520787	1(1)	0.0000

Source: Author Computation from E-Views 2025* Level of significance at 5%

Following Granger and Newbold (1974), it was acknowledged that many of the variables that appear in time series econometric models are non-stationary (or are integrated variables).The study thus carried out Unit root test on the univariate time series to find out the stationarity or otherwise of the series. The null hypothesis in these tests is that the underlying process which produced the time series is non-stationary. As can be seen from the test results on the first difference given in table 1, the null hypothesis has been rejected for all the variables indicating that all variables became stationary at their first difference and are, as a result integrated of I(1) as the variables do not require further differencing.

Table 2. Co-integration test: Trace Statistic.

Hypothesized		Trace	0.05	Prob.**
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None *	0.582688	79.00291	69.81889	0.0077
At most 1	0.493439	44.91997	47.85613	0.0920
At most 2	0.226509	18.39566	29.79707	0.5369
At most 3	0.173980	8.378864	15.49471	0.4258
At most 4	0.023427	0.924530	3.841465	0.3363

Table 3. Co-integration test: Max-Eigen.

Hypothesized		Trace	0.05	Prob.**
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Critical Value
None *	0.582688	34.08293	33.87687	0.0473
At most 1	0.493439	26.52432	27.58434	0.0678
At most 2	0.226509	10.01679	21.13162	0.7431

At most 3	0.173980	7.454333	14.26460	0.4369
At most 4	0.023427	0.924530	3.841465	0.3363

Source: Author Computation from E-Views 2025* Level of significance at 5%

Having tested the time series for stationarity, the next step in the time series analysis is to test for co-integration which amounts to checking whether the linear combination of the variables are stationary or not. It entails that the variables of interest have the same order of integration. It is only when the variables are integrated of the same order that a linear affiliation among them can be expected. Variables are said to be co-integrated if a long run equilibrium relationship exists among them. The variables are said to be co-integrated given that Trace statistic which has 2 co-integrating equations and Max-Eigen co-integration test with 1 co-integrating equation. This required us to carry out an Error Correction Mechanism estimation (Johansen, 1988.

Table 4. ECM Short-run Result.

Variable	Coefficient	Std. Error	t-Statistics	Prob
D(EXR(-1))	0.469343	0.167777	2.797421	0.0091
D(EXR(-2))	-0.050215	0.158720	-0.316374	0.7540
D(GDP(-1))	-0.463424	0.231488	-2.453284	0.0645
D(GDP(-2))	-0.426748	0.368460	-2.557324	0.0532
D(IFR)	-0.285476	0.180708	-1.579767	0.1250
D(IFR(-2))	-0.587696	0.442523	-1.328056	0.1945
D(ITR)	0.331669	0.173538	1.911218	0.0659
D(ITR(-1))	0.448449	0.486922	0.920987	0.3647
D(TOP)	-1.254498	0.621757	-2.017666	0.0530
D(TOP(-1))	-2.067556	0.715642	-2.889091	0.0072
D(TOP(-2))	-1.715750	0.731601	-2.345199	0.0641
ECM(-1)	0.875173	0.159594	2.724201	0.9053
Adj R^2 = 0.663424	F*= 3.453455	DW1.= 1.796762		

The result displays equilibrium structure given the estimated error correction model (ECM(-1) being of good fit. This is indicated by R- squared value of 0.663424 and implies that 66 percent variations in Nigeria foreign direct investment are explained by the variables included in the model. Furthermore, the Durbin Watson (DW) Statistic of 1.796762 displays that the estimated models is free from the problem of positive first order serial correlation since the computed value and is less than the tabulated value of 1.403. The F* value is 3.453455 meaning that the regression is statistically significant at 5 percent level of significance. The error correction terms are appropriately negative as the theory predicts. The error correction term indicates significant correction of about 0.875173 or 87 percent from short run disequilibrium to long run equilibrium. This 87 percent is the adjustment speed from the long run disequilibrium to the short run equilibrium.

Table 5. OLS RESULT.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.67355	13.33659	1.625118	0.1124
GDP	0.246234	0.432682	5.142792	0.0000

EXR	-0.281597	0.037600	7.489175	0.0000
IFR	-0.153252	0.234984	-0.652181	0.5182
ITR	-0.196500	0.248703	-0.790099	0.4344
TOP	0.206840	0.689487	0.299991	0.7658
R^2= 0.611036	F*= 14.92387	DW= 1.751137	Prob=0.000000	

The R^2 was 0.611036 or 61 percent implying that foreign direct investment, exchange rate, gross domestic product, inflation rate, interest rate and trade openness in Nigeria are variable included in the model which accounted for 61 percent of the total variation in the study while other variables not included in the model accounted for the remaining 39 percent. In nutshell, the model is remarkable since the F* value was 14.92387 and is significant at the 5% level of significance. Without serial correlation, the model would not work, according to the Durbin-Watson statistics of 1.751137, which is close to 2.

Discussion of Findings from the OLS Estimates

Exchange Rate and Foreign Direct Investment in Nigeria

The relationship between exchange rate and foreign direct investment in Nigeria is negative. This means that a point increase in exchange rate by -0.281597 units decreases foreign direct investment by -0.281597 units. The t* value is -7.489175 and the probability value of 0.0000 showing that exchange rate is statistically significant at 5 percent level of significance. This implies that exchange rate reduction will lead to a significant improvement in the inflow of foreign direct investment in Nigeria.

Gross Domestic Product and Foreign Direct Investment in Nigeria

The relationship between gross domestic product and foreign direct investment in Nigeria is positive. This means that a point increase in GDP by 0.246234 units increases foreign direct investment by 0.246234 units. The t* value is 5.142792 and the probability value of 0.0021 displays that gross domestic product is statistically significant at 5 percent level of significance. This indicates that gross domestic product improvement will lead to a significant enhancement in the inflow of foreign direct investment in Nigeria.

Inflation Rate and Foreign Direct Investment in Nigeria

The association between inflation rate and foreign direct investment in Nigeria is negative. This means that a point increase in inflation rate by -0.153252 units decreases inflation rate by -0.153252 units. The t* value is -0.652181 and the Prob-value of 0.5182 reveals that inflation rate is statistically insignificant at 5 percent level of significance. This designates that a decline in inflation rate will lead to a significant boost in the inflow of foreign direct investment in Nigeria.

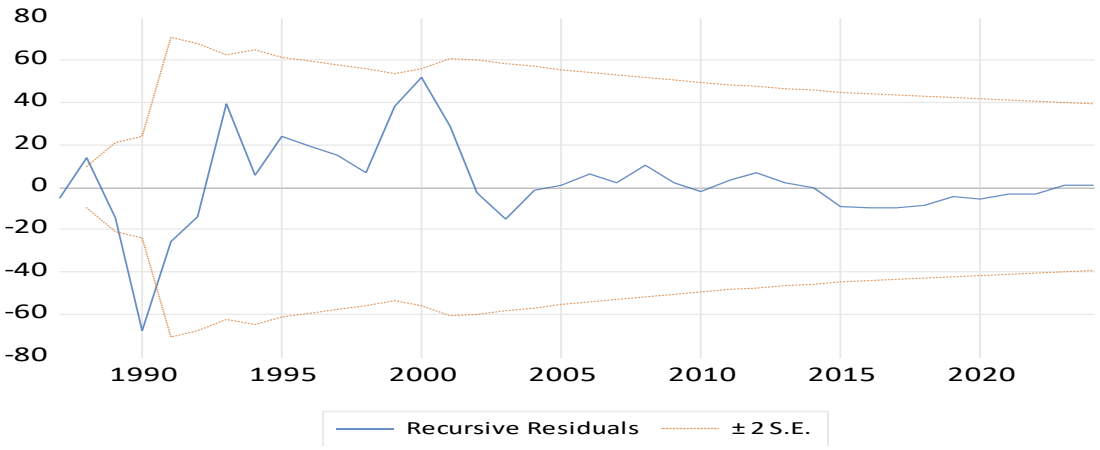
Interest Rate and Economic Growth in Nigeria

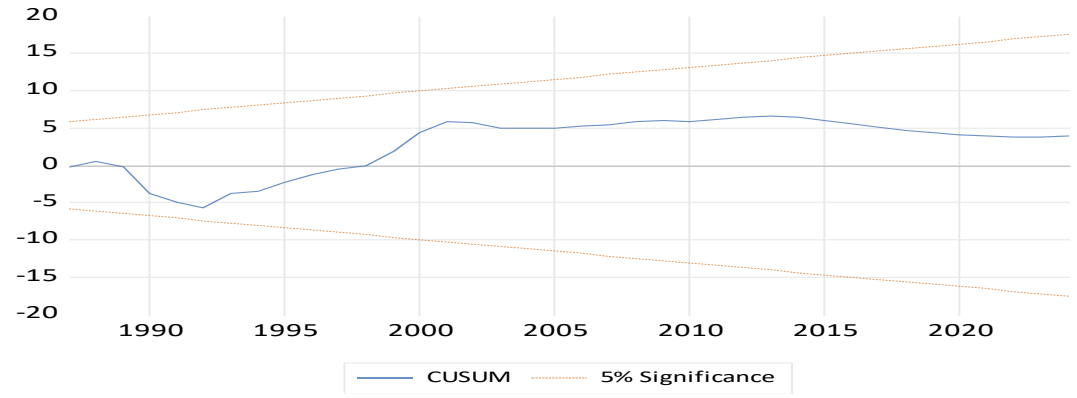
The association between interest rate and foreign direct investment in Nigeria is negative. This means that a point increase in interest rate by -0.196500 units decreases foreign direct investment by -0.196500 units. The t* value is -0.790099 and the probability value of 0.4344 reveals that interest rate is statistically insignificant at 5 percent level of significance. This designates that interest rate decline will lead to a significant enhancement in the inflow of foreign direct investment in Nigeria.

Trade Openness and Foreign Direct Investment in Nigeria

The association between trade openness and foreign direct investment in Nigeria is positive. This means that a point increase in trade openness by 0.206840 units increases trade openness by 0.206840 units. The t* value is 5.929991 and the probability value of 0.0043 reveals that trade openness is statistically significant at 5 percent level of significance. This reveals that trade openness will lead to a significant improvement in the inflow of foreign direct investment in Nigeria.

The stability test





Using the Recursive Residual and CUSUM stability test, one can infer that there was stability between macroeconomic variables and foreign direct investment in Nigeria within the review period, 1980-2024.

Conclusion

The outcomes of the analysis conducted examined the impact of macroeconomic variables on foreign direct investment in Nigeria and it was discovered that the explanatory variables are vital in the pull of foreign direct investment in Nigeria. Test of Stationarity were carried out using the Augmented Dickey Fuller (ADF) of Unit root test in order not to carry out analysis with spurious data. The ADF analysis showed that the variables included in the study were integrated at 1first difference 1(1), thus confirming that the data could be relied upon for estimations of error correction mechanisms.

Recommendations

Government should be able develop sound policies that would strengthen the lure of foreign direct investment in Nigeria by paying more attention to the identified macroeconomic policy variables that can attract its inflow. Again, the identified variables have revealed to be key tools that

could be used to encourage the inflow of foreign direct investment into the country. Furthermore, policies that guarantee the continuous growth of the economy must be followed and sustained. According to the study, economic growth is crucial to the attraction of FDI in Nigeria. Essentially, there is the need for the creation of friendly and enabling environment for FDI to thrive in Nigeria. A stable and enabling environment gives room for economic growth which in turn attracts foreign inflow of capital. Finally, interest rate and inflation rate policies should be revised to make it friendlier to trading partners. As can be seen from the estimates, foreign direct investment responds negatively to shocks in interest rates and inflation rates. Therefore, policies that reduces interest rates and inflation rate and which in turn favours trade openness should be pursued in the attraction of foreign direct investment in Nigeria.

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