



Exchange rate and foreign direct investment: Evidence from Nigeria

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Abstract

This study examines the impact of exchange rate on foreign direct investment inflows in Nigeria, adopting annual time series data relating to exchange rate volatility, foreign direct investment, GDP growth rate 2001-2022. Autoregressive technique was used. The findings of the study indicated that exchange rate volatility has a positive but insignificant impact on Nigeria's foreign direct investment inflows also GDP has positive but insignificant impact on foreign direct investment inflows in Nigeria. The study recommends that government ensure policies that will boost investors' confidence and enable foreign companies to invest in the country's economy.

Exchange rate stability and national security is very important in attracting foreign investment inflows and avoid unnecessary reprinting of national currency.

Keywords: Exchange rate volatility, gross domestic product, foreign direct investment, investment

Introduction

Foreign direct investment (FDI) plays a significant role in stimulating economic growth in most of the developing countries in the world. The main contribution of FDI to economic growth is an increase in productivity due to improved technology. In 2001, Nigeria recorded domestic savings of 34.33% and 14.27% in 2015, but this figure increased slightly to 17.81% trillion in 2018 (World Bank, 2020)^[49]. Nevertheless, the domestic savings ratio is still relatively low, so the need to close the fiscal deficit gap using FDI has been on the increase in Nigeria since 1981 when it was \$542 million to about \$8.84 million in 2011. Following the rapid insecurity recorded across Nigeria since 2011 and the global financial crises since then, the foreign inflow has continued to experience a downward trend going as low as only \$1.99 billion in 2018. The case is no different for the world's leading economic (The United States), foreign direct investment value has also been on a downward trajectory since 2015.

Ndugbu, (2017) considered Foreign Direct Investment as an aspect of globalization through which economies growth could be actualized. They observed that foreign direct investments contribute a lot to the economic growth and development in a substantial manner because such investments are more stable than other forms of capital flows. They also believed that FDI is not just a transfer of ownership as it usually involves the transfer of factors complementary to capital, but also include management, technology and organizational skills.

However, the International Monetary Fund (IMF) regarded foreign direct investment as the acquisition of at least 10% of the ordinary share or voting power in public or private enterprises by non-resident investors. Therefore, 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 that FDI help to bridge the gap between savings and investments or capital requirements of these countries.

Mwilima (2003) described FDI inflows as investment made to acquire a lasting management interest (usually at least 10% of voting stock) and acquiring at least 10% of equity share in an enterprise operating in a country other than the home country of the investor. There are two options for foreign investors looking to invest in the host country. First is the foreign portfolio investment which involves investing in stocks and securities of an existing company. The second one is foreign direct investment, which involves establishing a business enterprise and acquisition of business assets (Adeleke and Oyewole, 2018).

There is no doubt that the economically developing countries as well as underdeveloped countries economically are dependent on the 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 them. This financial assistance can be channelled into various sectors of the economy. It is pertinent to note that indigenous private sector companies rarely undertake activities that help in improving the infrastructure of the country. This stems from the fact that the gains from these infrastructural activities are made only in the long term; there are no short term benefits as such. This is where foreign direct investment plays a major critical role.

In 2018 the United States recorded an FDI inflow of 1.19 trillion (World Bank, 2020)^[49]. Studies on FDI are focused on the flow within developed countries and pay less attention to the flow from developed to developing countries (Alabi, 2019). FDI is a significant capital inflow source and has reasonably been on the increase (Antwi *et al.*, 2013)^[11]. Some of the advantages of FDI include developing new technology leading to new production techniques that lead to improved productivity and revenue generation from taxes for the federal government. Therefore, it is not surprising that FDI is perceived to be an instrument to promote growth and development. Therefore, it is not surprising that FDI is seen as an instrument to promote growth and development (Pegkas, 2015; Umeora, 2013)^[46].

A crucial macroeconomic instrument used to resolve foreign transactions and balance of payment deficits is the exchange rate. Consequently, central banks in individual countries are very critical of the value of exchange and strive to ensure its stability. Nigeria and many developing countries have suffered from exchange rate devaluations. The Nigerian economy went into recession in 2016, and this unfavorable economic phenomenon adversely affected almost all spheres of the country's economy.

Indicator from the country's capital market was abysmal. The signal from the Nigerian foreign exchange market was appalling. Aside from the fact that there was undue high volatility in the country's exchange rate, Nigeria's actual exchange rate at a given point in time within this period was hard to determine. From 2016 to 2020, when this study was conducted, the Nigerian foreign exchange market has been severed into two. The official market and the unofficial market popularly called the parallel market. Although the official market is recognized and reported by the Central Bank of Nigeria, the parallel market appeared to be the most patronized by individuals and corporate entities for foreign exchange transactions. Hence, activities in the parallel market seem to affect economic activities more. There is a vast difference in the costs of transactions in both markets.

Foreign Direct Investment in Nigeria has not been adequate to spur dynamic growth in some areas, and several policy measures have been put in place to remedy the situation. One of the areas of policy adjustment to that effect is in the area of exchange rate. Several exchange rate policies have been adopted in Nigeria over the years; ranging from fixed exchange rate regime and flexible exchange rate regime to a unified exchange rate policy and so on. However, FDI remains inadequate for rapid infrastructural and economic development. This issue prompts the researcher to examine the impact of exchange rate on foreign direct investment inflows in Nigeria.

The objective of this study is to examine the impact of exchange rate fluctuation on foreign direct investment in Nigerian 2010-2020.

Literature review

There have consistent arguments regarding the impact of FDI on economic growth in an economy, which has resulted in mixed evidence. Some authors (Ehimare, 2011; Mokuolu, 2018; Sokang, 2018) ^[18, 29, 42] opined that FDI spurs economic growth, leading to economic prosperity. In contrast, the other school of thought (like Akinlo, 2004; Nwanji *et al.*, 2020) ^[5, 31] believes that FDI does not significantly impact economic growth.

The Autoregressive Distributed Lag Model (ARDL) was employed by Sunde (2017) ^[43] to examine quantitatively, the relationship between foreign direct investments, exports and economic growth. The research was focused on the economy of South Africa. The short-term dynamics were analysed in an error correction model, and the VECM Granger causality approach was utilised to analyse the causal effects. Cointegration between economic growth, foreign direct investment and exports were verified in the study. The analysis found that foreign direct investment and exports were enhancing South Africa's economic growth. A unidirectional causal relationship is found between foreign direct investment and economic growth, foreign direct investment and exports while a two-way causality between economic growth and exports. Similarly, Sokang (2018) ^[42]

assessed the impact of FDI on Cambodia's economic growth. Using data from 2006 to 2016, the findings show that FDI has a significant positive relationship with Cambodia's economic growth.

The study of Mokuolu (2018) ^[29] added exchange and interest rate as a moderating variable in examining the impact of FDI on economic growth in Nigeria. The study of Ehimare (2011) ^[18] used inflation as a moderating variable in addition to the exchange rate in investigating the relationship between FDI and economic growth in Nigeria. The study shows FDI and trade openness to be a significant contributor to the economy leading to the entry of several big companies, in particular those in the telecommunications sector. Meanwhile, the study found that inflation does not have an impact on FDI. However, the exchange rate affects FDI.

A recent study by Ogu (2020) examined the effect of exchange rate fluctuation, interest rate, inflation, gross fixed capital formation and gross domestic product on foreign direct investment in Nigeria. The results indicated that exchange rate fluctuation has a positive relationship with foreign direct investment. The result also shows that interest rate and inflation contributed positively to the inflow of foreign direct investment in Nigeria.

Simultaneously, variables such as gross fixed capital formation and gross domestic product negatively affect the inflow of foreign direct investment in Nigeria. The impact of foreign direct investment on economic growth can be statistically insignificant, as seen in Akinlo (2004) ^[5] study. The article investigated the impact of foreign direct investment (FDI) on Nigeria's economic growth for the period 1970–2001. Using Error Correction Model (ECM), the results show that both private capital and lagged foreign capital have small, and not statistically significant, economic growth. The results seem to support the argument that extractive FDI might not be growth enhancing as much as manufacturing FDI. Finally, the results show that labour force and human capital have a significant positive effect on growth.

Khan (2007) claims that despite the fact that developing countries share in the global distribution of FDI, their FDI portion has remained insignificant or even decreasing.

Falki (2009) ^[20] highlighted employment increase, augmented productivity, improved exports and high rate of technology transfer as major effects of FDI on the host economy. He further claimed that the possible benefits that the host economy could derive from FDI include the facilitation of the exploitation and use of local natural resources, introduction of current tools of organization and advertising, creation of easy access to modern skills, provision of external inflows that can be used for funding current account deficits, and the provision of a platform for increasing the stock of human capital via on-the-job training.

Exchange rates can be defined as the domestic currency price of a foreign currency. He maintains that exchange rates alongside their levels and fluctuations significantly influence FDI activity (Odili, 2014). The total amount involved in foreign direct investment per time, and the apportionment of the investment expenditure through a number of countries, can be significantly influenced by exchange rate (Goldberg, 2006). In a situation where currency declines in value in relation to the value of another country's currency, i.e. currency depreciation, FDI tends to

suffer two implications as a result of the exchange rate fluctuation. Firstly, the country's earnings and production expenditure reduce in relation to her foreign counterparts.

Secondly, if every factor remains unchanged, the country whose currency depreciates has enhanced "locational advantage" or advantage as a location for attracting productive capacity investment. Depreciation in exchange rate leads to an improvement in the overall rate of return, through "relative wage" channel to foreigners who are considering foreign investments in this country (Goldberg, 2006).

The theoretical arguments linking exchange rate volatility or fluctuations to FDI have been spearheaded by two strands of arguments: production flexibility arguments and risk aversion arguments. According to production flexibility arguments, exchange rate volatility increases foreign investment because firms can adjust the use of one of their variable factors following the realization of nominal or real shocks. This argument relies on the assumption that firms can adjust variable factors, for the argument would not hold if factors were fixed. According to the risk aversion theory, FDI decreases as exchange rate volatility increases. This is because higher volatility in the exchange rate lowers the certainty equivalent expected of exchange rate. Certainty equivalent levels are used in the expected profit functions of firms that make investment decisions today in order to realize profits in future periods (Campa, 1993).

Goldberg and Kolstad, (1995) ^[21] extend this claim to include risk-neutral firms by using the argument of future expected profits. He hypothesizes that as investors are concerned with future expected profits, firms will postpone their decision to enter as the exchange rate becomes more volatile. Risk neutral firms will thus be deterred from entering foreign markets in the presence of high levels of exchange rate uncertainty. The theoretical result is confirmed empirically for inward investment to the US in the wholesale industries, particularly in cases where the sunk costs of entry are high.

Goldberg and Kolstad (1995) ^[21] note that when evaluating risk aversion approaches versus production flexibility approaches it is important to distinguish between short-term exchange rate volatility and long-term misalignments.

Risk-aversion arguments are more convincing under short-term volatility because firms are unlikely to be capable of adjusting factors in the short-run. In the short run, factors of production are usually fixed, and as a result firms will only be risk-averse to volatility in their future profits. However, the production flexibility argument appears convincing under the long-term misalignments because firms are now able to adjust their use of variable factors (Jayaratnam, 2003) ^[23].

Nazima (2011) ^[30] empirically studied the impact of exchange rate volatility on foreign direct investment in the Pakistan economy. He adopted data on time series from secondary sources between the period 1980 and 2010. In finding both short and long run estimates of his study, the Auto regressive distributed lag (ARDL) was employed, and in finding the direction of causality existing between exchange rate fluctuation and FDI, the multivariate vector error correction method (VECM) causality test was conducted. The results of his study revealed that FDI inflow is impacted negatively on a short run, and positively on a long run by exchange rate volatility.

Yousaf, Shahzadi, Kanwal and Hassan (2013) ^[48] examine the extent to which exchange rate volatility impacts on FDI in Pakistan within the period 1980 and 2011. The OLS regression model and volatility analysis was adopted in this study. Their findings revealed that while exchange rate has a significant positive relationship with FDI, exchange rate volatility and inflation alters FDI volume.

Ogunleye (2008) in his study on FDI and exchange rate nexus in Sub Saharan Africa, examined the region, by employing time series and panel model estimation techniques to test data in nine countries within the region. The results of his study found that FDI inflows are daunted by exchange rate volatility.

In the same vein, Ogunleye (2009) used a two stage least square methodology in testing the correlation existing between the exchange rate and (FDI) inflows in sub-Saharan African countries using Nigeria and South Africa as case study. The study revealed that Foreign Direct Investment (FDI) inflow is granger caused by exchange rate volatility, and FDI inflows granger causes exchange rate volatility in Nigeria. When these results were compared with South Africa, it was discovered that the relationship is however weak.

Alaba (2003) ^[8] in his attempt to investigate the effects of exchange rate volatility on FDI in Sub Sahara African (SSA) countries adopted both GARCH measure of volatility and the error correction methodology. Findings of his study officially revealed that in both agricultural and manufacturing sectors, market exchange rate volatility does not significantly influence FDI inflows.

Omorokunwa and Ikponmwoosa (2014) ^[35], after a plethora of initial investigations which include the Engle and Granger two-step co-integration procedure, and the Augmented Dickey Fuller (ADF) test for stationarity, later applied the Error Correction Model (ECM), to test the association between exchange rate instability and foreign direct investment in Nigeria between 1980 and 2011. The result revealed that Foreign Direct Investment (FDI) is not significantly affected by exchange rate instability in the short run, but very significantly in a long run.

Aliyu (2009), on the basis of quarterly observations, adopted standard deviation degree of exchange rate instability in assessing the extent to which non-oil flows in Nigeria has been affected by exchange rate volatility between 1986-2006. The statistical results of the study showed that a non-oil export is reduced by exchange rate instability in Nigeria.

Osinubi and Amaghioyodiwe (2009) ^[38] empirically tested how exchange rate fluctuations influence Foreign Direct Investment (FDI) in Nigeria. Applying the error correction technique and OLS model on time series data obtained from secondary sources from 1970 to 2004, the results revealed that investors' decision is not significantly influenced by exchange rate fluctuations. The study also revealed that a significant positive association exists between real inward FDI and exchange rate.

Obiora and Igue (2006) examined the possible impact of exchange rate fluctuations on foreign direct investment in Nigeria. The findings of their investigation showed that Nigeria's export to the US has been significantly influenced by exchange rate instability.

Udoh and Egwaikhide (2008) ^[44] employed the GARCH model to empirically measure the impact of exchange rate fluctuations on FDI in Nigeria from 1970 to 2005. Their study revealed that inflation fluctuations and exchange rate volatility negatively affect FDI in Nigeria.

Theoretical Review

This theory was propounded by early neoclassical, it stated that foreign capital flows are influenced by the highest expected rate of return on investment. The future capital flows are directly influenced by incentives like expected rate of return on investment; the macroeconomic stability especially with regards to exchange rate and inflation, investment guidelines, security of investment and tax regime. This is due to the fact that macroeconomic variable’s volatility creates uncertainty for private investors in terms of the cost of their investment and the profitability hitherto. Thus, addressing the problems that constitute threats to foreign capital inflows would assist in the improvement of the foreign investment climate (Cockcroft & Riddell, 1991). The major determinant of foreign capital inflows for developing economies is the expectation of higher returns or profits by firms (Meier, 1995) as cited in Ekenne, Anthony & Anne (2019) ^[19].

Methodology

This study examine the impact of exchange rate fluctuations on foreign direct investment inflows in Nigeria, a functional model will be formulated and specified for the period 2005 to 2020. Time series data will be used. Ultimately the following source of data will be utilized; Use of Journal, the Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics.

Research design

Ex-post facto research design will be adopted. Ex-post facto research design according to Onwumere (2009) is the type of research involving events that have already taken place. Data already exist as no attempt is made to control or manipulate relevant independent variables. This is suitable for the purpose of this research because it is cost effective.

Nature and Source of Data

Secondary data will be used from CBN annual reports and its statistical bulletin and also data from National Bureau of Statistics.

Method of Data Collection

Data for this since its secondary will be collected from published and unpublished materials, internet and official website of CBN, NBS and other relevant sources.

Method of Data Analysis

The exchange rate volatility series will be estimated using the generalized autoregressive conditional heteroscedasticity (GARCH) technique. After the conduct of preliminary unit root test on the series, the 2Stage Least Squares methods was employed to estimate the model of the study.

Model Specifications

In order to examine the impacts of oil price change on Nigeria’s economic growth, we specify our functional function as:

$$FDI f(EXR, GDP).....(3.1)$$

Where GDP = gross domestic product,

EXR = exchange rate and

FDI = foreign direct investment.

$$FDI_t = \beta_0 + \beta_1 EXR + \beta_2 GDP + \varepsilon.....(3.2)$$

$$FDI = \alpha_0 + \alpha_1 EXR + \alpha_2 GDP + \varepsilon.....(3.3)$$

Result and discussion

Descriptive Statistics

Table 1 below shows the mean figures of FDI, EXR, and GDP are 42.7125, 1.8924E2 and 65.9500 respectively. In the order the variables are presented, the minimum figures are 775.25, 101.70 and 8.23 respectively, while the maximum figures are 8,841.11, 358.81 and 154.25, with standard deviation of 172.43769, 77.47165 and 46.04972 respectively.

Table 1: Descriptive statistics of FDI, EXR and GDP

	Min.	Max.	Mean	Std. Dev.
FDI	775.25	8,841.11	42.7125	172.43769
EXR	101.70	358.81	1.8241E2	77.47165
GDP	8.23	154.25	65.9500	46.04972
Observations	23			
Sample	2001 – 2022			

Source: Authors Computed result 2023.

Table 2: Regression Analysis

Dependent Variable: FDI

Method: Least Squares

Date: 23/08/23 Time: 10:00

Sample: 2001-2022

Included observations: 23

Variable	Coefficients	Std. Error	t-Statistic	Prob.
C	-126.251	122.937	-1.027	0.319
EXR	1.116	1.284	0.869	0.397
GDP	-0.524	2.160	-0.243	0.811
R-squared	0.142		Mean dep. var.	40012.125
Adjusted R-squared	0.041		S.D. dep. var.	127.43769
S. E. of the estimate	168.89539		F-statistics	1.403
Sum of Square	80024.303		Prob. (F-St)	0.273

Source: Authors Computed result 2023.

The estimation function is;

$$FDI = -126.251 + 1.116EXR - 0.524GDP$$

The estimation function in the Table 2 EXR shows a positive value of the coefficient. While GDP indicated negative value as well as FDI. This implies that a unit increase in EXR will results in the increase of FDI inflows by 1.12 in Nigeria. Also a unit increase in GDP will results in the decrease of FDI inflows by 0.52 or 52% in Nigeria.

The coefficient of determination R2 value at 0.142 shows that 14% of changes in the response variable are explained by the combined effect of changes in the explanatory variables; and the value of the Adjusted R2 shows at 0.04% confidence level that the regression model adopted as the basis of the analysis is a proper and good fit.

Testing of Hypotheses

Hypothesis one: Exchange rate (EXR) has no significant impact on foreign direct investment cash flows (FDI) in Nigeria. The P-value of 0.319 of the regression indicated that exchange rate has positive but insignificant impact on FDI inflows in Nigeria. This means that the null hypothesis is accepted.

Hypothesis two: Gross domestic product (GDP) has insignificant impact on foreign direct investment cash flows (FDI) in Nigeria. The probability value (0.811) of the regression resulted that GDP has positive and insignificant impact on FDI inflows in Nigeria. This means that the null hypothesis accepted and alternate hypothesis rejected.

1. Summary

The findings of this study summarized as;

That exchange rate has positive but insignificant impact on foreign direct investment inflows in Nigeria also it was discovered that gross domestic product has positive and insignificant impact on foreign direct investment inflows in Nigeria.

2. Conclusion

This research work seeks to examine the impact of exchange rate on foreign direct investment inflows in Nigeria. Base on the findings of the research it was concludes that there is a positive correlation between independent and dependent variables but the impact of the relationship is insignificant. In another word exchange rate and gross domestic product have positive but insignificant impact on foreign direct investment inflows in Nigeria.

3. Recommendations

The study recommends that the government ensure policies that will boost investors' confidence and enable foreign companies to invest in the country's economy. Government and private-sector agencies are encouraged to invest more in the country's education and infrastructure and technological innovations. Exchange rate stability and national security is very important in attracting foreign investment inflows and avoid unnecessary reprinting of national currency.

This work was supported by



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