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EMPIRICAL ASSESSMENT OF THE IMPACT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH IN NIGERIA

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Abstract

The study empirically examined the impact of Foreign Direct Investment on economic growth in Nigeria from 1981 to 2023. The study used Auto regressive Distributive Lag (ARDL), unit root test of Augmented Dickey Fuller and Phillips Perron. The test showed that real gross domestic product and exchange rate were found to be stationery at first difference; foreign direct investment and trade openness were found to be stationery at level. Based on the result, the Auto regressive Distributive Lag (ARDL) model showed that in the short run foreign direct investment has positive and statistical significant effect on real gross domestic product at lag 1 and 2, openness has negative but statistically significant impact on gross domestic product in Nigeria, at lag 1. Exchange rate has negative and statistically insignificant impact on gross domestic product at lag 1, 2 and 3. Based on the long run coefficient, foreign direct investment indicates positive and statistically significant effect on gross domestic product, openness has positive and statistically significant effect on gross domestic product, exchange rate has positive and statistically significant effects on gross domestic product in Nigeria in the long run. The study recommends that government should create a sound and conducive business environment in order to attract foreign investors to the country.

Keywords*: Foreign direct investment, Economic growth, Exchange rate.*

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1. Introduction

Foreign direct investments are widely considered as vehicles through which foreign technology and capital are attracted into the developing economies of the world. Developing nations are known for low savings and investment, which are prompted by low rate of capital accumulation. One of its notable characteristics to propel globalization is the deliberate motivation of cross border investments, especially by transnational corporations (TNC) and firms (Cookey and Eniekezimene, 2020). Foreign direct investment (FDI) not only provides developing countries (with the much needed capital for investment, it also enhances job creation, managerial skills as well as transfer of technology. All of these contribute to economic growth and development. The need to attracting foreign investment into the developing economies became pressing, as efforts to mobilize domestic savings through taxation and public borrowing are not sufficient or enough to stimulate the required level of investment in these countries. Aside filling the domestic resource gap through foreign exchange earnings and improvement of the country's capacity to export, there is need for provision of managerial knowledge and skills including organizational competence and access to foreign market; transfer of technology from developed economies as well as provision of an array of goods and services to residents in the receiving country; so as to supply the required capital for investment and enhance competition in the host nation's industries (Wafure and Nurudeen. 2010). Foreign direct investment includes; external resources including technology, managerial and marketing expertise and capital. All these generate a considerable impact on host nation's productive capabilities and the success of government policies of stimulating the productive base of the economy depend largely on her ability to control adequate amount of FDI comprising of managerial, capital and technological resources to boast the existing production capacity (Omankhanlen, 2011).

Nigeria at present is still characterized by low economic growth, which has created other macro-economic problems such as inflation, low export, unemployment, unfavorable exchange rate, balance of payment disequilibrium, etc rightly observed by (Akinlo, 2017). Also, over the years, many developing countries in the world are yet to meet the criteria of developed countries in the area of economic growth due to the existing economic crisis in their economies. Therefore, to advance the economic growth of these developing countries in line with UNCTAD recommendations for attracting FDI, there is an urgent need to source for realistic answers (Ajibola, Isiaka, Ogunleye, and Adeyemi, 2018). The Nigerian government has for so long accepted to woo foreign investment as a way of stimulating economic growth particularly from 1986. The arguments for FDI inflow as a supplement for domestic savings and capital accumulation, the main conduit through which technology transfer takes place as well as expansion in exports arising from increased capacity and competitiveness in domestic production especially in the long run have been buttressed by (Adejumo, 2019). Consequently, various policies and measures have been put in place to attract FDI into the economy. We are aware that capital movements across national boundaries are influenced by many factors. Some of these factors include: price level, country's growth rate (GDP), exchange rate, interest rate, trade openness, political stability, credit rating, debt service, legal system, corruption, infrastructural development, government policies and programmes, deregulation, etc,

Macroeconomic variables such as inflation rate, exchange rate, money supply, etc. influence the changes in FDI of a nation. In addition, the level of import also influences its variation. Cobham (2001) observed the crowding out of domestic firms and possible contraction in the total industry and or employment. Although crowding out is a rare event, yet the benefit of FDI in export promotion remains controversial and depends crucially on the motive for such

investment (World Bank, 1998). This would be by limiting downstream producers to low value intermediate products, and in some cases "crowding out" local producers to eliminate competition. Against this background, this study examined the effect of Foreign Direct Investment on economic growth in Nigeria. The rest of the study is organised as follows: empirical literature review, methodology, presentation and analysis of the findings, finally conclusion.

2. Empirical literature

Ajayi, et al., (2023) investigated the effect of foreign direct investment on the Nigerian economy using export growth rate, trade openness, external debt growth rate, foreign portfolio investment, exchange rate and inflation from 1985-2020. Data was analysed using ordinary least square model. the study found that export growth rate, trade openness, external debt growth rate, foreign portfolio investment and inflation rate have no significant effect on the Nigerian economy, while exchange rate has a significant effect on the Nigerian economy. The study recommends that government should export-led growth strategies on long-term development plans. It further that there is also the need for Nigerian government to make favourable trade policies and investment conditions friendlier to boost the inflow of foreign portfolio investment in Nigeria.

Similarly, Cookey and Eniekezimene (2020) examined the determinants of foreign direct investment inflow into the Nigerian economy. Data was analyzed using auto regressive distributed lag model (ARDL). From the findings, it reveals that exchange rate, trade openness are positive determinants of FDI in the Nigerian economy. It also found that for the Nigerian economy to attract FDI significantly by one percent, exchange rate and trade openness will increases by 0.18 and 5.00 respectively inflation rate, and interest rate are negative determinants of foreign direct investment in Nigeria.

Giwa etal., (2020) investigated the impact of foreign direct investment on economic growth in Nigeria using OLS technique. The study found that labour quality has a positive and significant effect on RGDP, capital intensity displayed a significant negative effect on RGDP in Nigeria. The study therefore recommends that policy makers in should incorporate into her broad policy, improvement in capital intensity as bedrock to growing the economy through FDI spillover effects.

Ugwuanyi, et al., (2020) investigated the impact of foreign direct investment on economic development in Nigeria using Auto regressive distributed lag model (ARDL). It found that real foreign direct investment, exchange rate and balance of trade have positive but insignificant impact on economic growth in Nigeria. The study recommends that government should provide enabling business environment by provision of steady supply of electricity and ameliorating or exterminating insurgent activities in the country and restore confidence of investors to come into Nigeria and invest, doing this, would increase volume of foreign direct investment into the country and would enhance exports thereby reducing exchange rate.

Abiola (2019) examined the determinants of FDI in Nigeria using Structural Vector Auto regression model (SVAR). Based on the result, it found that inflation rate, exchange rate, degree of openness are positive determinants of GDP (RGDP), only infrastructure was found to be negatively related to FDI. The study recommends that social amenities like good road, electricity, and information and communication technology should be improved to attract foreign direct investment.

Ebire, et al., (2018) investigated the major determinants of FDI in Nigeria. The study employed error correction (ECM) model. The result showed that exchange rate, GDP, first lag of GDP, military expenditure, first lag of military expenditure, political stability and financial development are the major determinants of FDI inflows to Nigeria. The study recommended that government at all levels should tackle the menace of insecurity ravaging the economy and portraying the country as insecure thereby creating a secured environment for FDI inflows.

Arawomo and Apanisile (2018) investigated the key determinants of FDI in the Nigerian telecommunication sector by employing Auto regressive distributed lag model (ARDL). The result shows that the key determinants of FDI flow into the Nigerian telecommunication sector are market size, trade openness, government expenditure, inflation and interest rate. It recommends that government needs to make more effort in the expansion of market by instituting agencies or regulatory bodies to bring about transparency in the market, hence encourage the flow of FDI into the telecommunication sector and should remove structural barriers by offering incentives such as tax holidays, import duties exemptions and subsidies to foreign firms. This will lead the sector to higher level of openness and internationalization and consecutively attract more FDI.

Florence, David and Daniel (2015) examined the effect of macroeconomic variables on FDI in Nigeria and to Investigate the causal effect of FDI on economic growth in Nigeria using vector error correction model (ECM) and includes export, inflation, exchange rate, import, FDI, interest rate, and trade openness in the model. The study revealed that foreign direct investment is negatively related to economic growth, export, inflation and interest rate while foreign direct investment is positively related to exchange rate and import. All these variables were statistically significant in determining FDI in Nigeria.

3. Methodology

The paper examines the impact of Foreign Direct Investment on economic growth in Nigeria from 1981 to 2019. The model of the study is specified as

$GDP = F(FDI, EXRATE, OPN, INFL)$ ..... *(3.1)*

Where

$GDP = Gross\ domestic\ product$

$FDI = Foriegn\ direct\ investment$

$EXRATE = Exchange\ rate$

$OPN = Trade\ openness$

$INFL = Inflation\ rate$

The econometric model is specified as

$GDP_{t-1} = \alpha_o + \alpha_1 FDI_{t-1} + \alpha_2 EXRATE_{t-1} + \alpha_3 OPN_{t-1} + \alpha_4 INFL_{t-1} + \varepsilon_t$ .....*(3.2)*

Where

α_o = constant term

ε_t = error term

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \ and\ \alpha_5$ are the parameters to be estimated.

ARDL Model and Error Correction Mechanism

If the variables are cointegrated then there is the need to test for ECM which shows how much of the disequilibrium is being corrected over a period; what is called 'adjustment effect'

(Asteriou and Hall, 2007). ECM possesses advantages of resolving the problem of spurious regression because it eliminates trend in the variables involved; and that the disequilibrium error term is stationary variable, which is prevented from exploding over time (Asteriou and Hall, 2007). The general autoregressive distributed lag (ARDL) ECM is presented in equation

$$\Delta y_t = \mu + \sum_{i=1}^{n-1} a_i \Delta y_{t-i} + \sum_{i=0}^{m-1} \Upsilon_i \Delta x_{t-i} - \pi \hat{e}_{t-1} + \varepsilon_t \quad \text{.....(3.3)}$$

Where Δ is the difference operator, y_t is a vector of dependent variable, x_{t-1} is the matrix of lag values of explanatory variables and π is the adjustment effect or error correction coefficient which is expected to be negative for the error to be corrected. Specifically, the ECM model to be tested is specified in equation.

$$\Delta GDP_t = \mu + \sum_{i=1}^{n-1} a_i \Delta GDP_{t-1} + \sum_{i=0}^{m-1} \beta_i \Delta FDI_{t-i} + \sum_{i=0}^{m-1} \Upsilon_i \Delta EXRATE_{t-i} + i=0m-1ui\Delta OPNt-i+ i=0m-1\delta i\Delta INFLt-i- \pi et-1+\varepsilon t \text{.....(3.4)}$$

If π = 1 then 100% of the adjustment takes place within single period (instantaneous/full adjustment). If $\pi = 0$ then there is no adjustment. Thus, any other value is interpreted accordingly; a value of π closer to *1* implies quick adjustment, and value closer to0implies slow adjustment. To select the most fitted model lag length are chosen automatically by Akaike Information Criterion (AIC).

The null and alternative hypothesis for bound test concerning the test for cointegration is:

Ho: a_i=β_i=ϒ1=$u_i = v_i = \omega_i$= 0 (No long run relationship).

H1:$a_i \neq \beta_i \neq$ϒ1≠ $u_i \neq v_i \neq \omega_i \neq 0$ (there is long run relationship).

4. Results and Discussion

Descriptive statistics

Table 1 descriptive statistics

Statistics	LRGDP	LFDI	LOPN	EXRATE
Mean	11.32321	9.171021	0.072227	1.509917
Median	11.22612	9.272784	0.064110	2.007310
Std. Dev.	0.223794	0.503331	0.332045	0.862061
Skewness	0.364620	-0.058031	-0.081854	-0.782133
Kurtosis	1.606629	1.755915	2.523927	2.309764
Jarque-Bera	4.019070	2.536979	0.411850	4.750450
Probability	0.134051	0.281256	0.813894	0.092994
Observations	39	39	39	39

Source: researcher computation using E-views 10 (2024).

Table 1 presented the result of descriptive statistics of the study; it indicates that the standard deviations of the variables employed are not far away from their means. The Jarque-Bera test for normality is also estimated. It indicates that real gross domestic product, foreign direct investment, openness and exchange rate are all normally distributed.

Unit root test

Table 2: unit root test

	Test at level		**Test at first difference**		Order of Integration
Variables	**ADF test**	**PP test**	**ADF test**	**PP test**	
LGDP	0.026217	0.722361	-3.856836	-3.856836	I(1)
LFDI	-3.268333	-3.111297	-9.534779	-10.10558	I(0)
LOPN	-3.268333	-3.111297	-9.534779	-10.10558	I(0)
LEXRATE	-2.090901	-2.239422	-5.205054	-5.205054	I(1)

Source: researcher computation using E-views 10(2024).

Table 2 presented the result of Augment Dickey Fuller and Phillips Perron unit root test, it showed that all the variables real gross domestic product and exchange rate are stationery at first difference are I(1) process in both ADF and PP, foreign direct investment and trade openness are stationery at level i.e (0) process. Therefore, there is mixture of order of integration among the variables employed.

Bound Test for Long run

Table 3: result of cointegration Bound test

Statistics	**Value**		**Critical bound**			
F-statistics	11.10616**		1%	2.5%	5%	10%
		I(0) Bound	3.65	3.15	2.79	2.37
		I (1)Bound	4.66	4.08	3.67	3.2

Source: researcher computation using E-views 10(2024).

From table 3, the result of cointegration bound test showed a higher value of F-statistics than any of the critical values of all bounds. It means, there is a strong evidence of cointegration in the model. This provides evidence of adopting Autoregressive Distributive Lag model (ARDL) in the study.

Results of Autoregressive Distributed Lag (ARDL) model

Based on the unit root and bound tests conducted in the study which suggests the use of ARDL model. The appropriate model (number of lags) is selected automatically using Akaike Information Criterion (AIC) which is seen as more robust model.

Short run Relationship

Below the result of short run parameters of the ARDL model is presented. AIC suggests a 4, 3, 2, 4 model after testing for up to 500 different models.

Table 4: short run parameters of the ARDL model

Variables	Coefficient	Std. Error	t-Statistic	Prob.**
D(LRGDP(-1))	0.151892	0.099178	1.531501	0.1430
D(LRGDP(-2))	0.128770	0.081850	1.573254	0.1331
D(LRGDP(-3))	0.155693	0.074810	2.081192	0.0520
D(LFDI)	0.043761	0.019398	2.255981	0.0368
D(LFDI(-1))	-0.097171	0.024636	-3.944333	0.0010
D(LFDI(-2))	-0.015932	0.005445	-2.925903	0.0090
D(LOPN)	-0.063013	0.018363	-3.431509	0.0030
D(LOPN(-1))	0.076536	0.022444	3.410037	0.0031
D(LEXRATE)	-0.011296	0.010122	-1.115951	0.2791
D(LEXRATE(-1))	0.000236	0.010871	0.021674	0.9829
D(LEXRATE(-2))	0.004037	0.010135	0.398296	0.6951
D(LEXRATE(-3))	0.051074	0.009194	5.555234	0.0000
R-squared	0.999386			
Adjusted R-squared	0.998841			
Serial correlation	0.1848			
Heteroscedastics	0.7066			
Normality	0.768804			
Ramsey test	0.6176			

Source: researcher computation using E-views 10(2024).

Table 4 indicates insignificant autoregressive of the dependent variable at lag 1 and 2 while at lag 3 it is significant, it showed that gross domestic product does not depend largely on itself in the short run. Foreign direct investment itself showed positive and statistical significant effect with gross domestic product in Nigeria in the short run, positive finding is in line with economic apriori expectation which assumed to be positive effect between the two variables at lag 1 and 2. Openness itself shows negative but statistically significant impact on gross domestic product in the short run, the finding counter the economic apriori expectation, it is expected to have positive relationship, at lag 1. Exchange rate shows negative and statistically insignificant impact on gross domestic product in Nigeria in the short run, at lag 1, 2 and 3.

The R-squared and its adjusted value are very high 0.999386, this implies that 94% change in real gross domestic product is explained by foreign direct investment, exchange rate and openness in Nigeria. The model passed all post estimation test such as Heteroscedasticity, Ramsey and normality test, as their probability values are greater than 5% except for serial correlation test.

Long run and Error Correction term

Table 5: ARDLCointegration and Long run form Results

Variables	Coefficient	Std. Error	t-Statistic	Prob.**
LFDI	0.359369	0.019323	18.59749	0.0000
LOPN	0.374925	0.026960	-13.90650	0.0000
LEXRATE	0.109517	0.011195	9.782886	0.0000
CointEq(-1)*	-0.358413	0.043505	-8.238383	0.0000

Source: researcher computation using E-views 10(2024)..

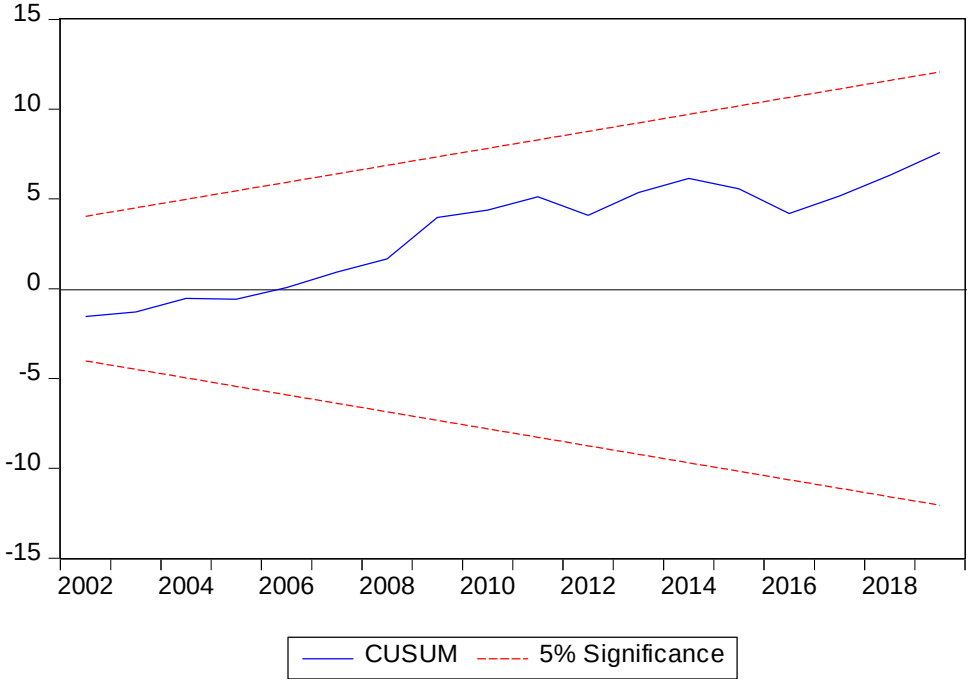
The table 5 showed that foreign direct investment has positive and statistically significant effect on gross domestic product in Nigeria in the long run, the positive sign is in line with apriori expectation that foreign direct investment impacted positively on GDP in Nigeria. When foreign direct investment increases the gross domestic product also increases. Openness shows positive and statistically significant effect on gross domestic product in Nigeria in the long run, this means that an increase in openness will also cause increases in gross domestic product in Nigeria. Exchange rate showed positive and statistically significant effects on gross domestic product in Nigeria in the long run, this is in line with economic theory that exchange rate has positive effect with gross domestic product. This means that increase in exchange rate will bring about an increase in gross domestic product in Nigeria in the long run.

The beautiful thing in the model is error correction term (ECT) meet all the theoretical and statistical requirements both in the sign and size. The ECT coefficient is -0.358413and significant at 5%, this indicates that at 35.84% of the disequilibrium due to the shock in the previous years is adjusted back to the long run equilibrium in the current year.

Stability

Stability test of the model is employed in order to ensure the data generating process is compatible with the estimated coefficient of the model.

Figure 1 cusum plot recursive residual of ARDL model



Source: researcher computation using E-views 10.

From figure 1, the cusum plot is within 5% level of significant, this showed that the model is stable i.e. there is no chance of having spurious regression.

5. Conclusions and Recommendations

The study examined the impact of foreign direct investment on the economic growth of Nigeria. Variables employed in the study include gross domestic product, foreign direct investment, trade openness, and exchange rate. Data were tested using unit root test e.i Augmented Dickey Fuller and Phillips Perron, the test indicated that real gross domestic product and exchange rate were stationery at first difference; foreign direct investment and trade openness were stationery at level. Based on the result, the Auto regressive Distributive Lag (ARDL) model showed that in the short run foreign direct investment has positive and statistical significant effect on real gross domestic product at lag 1 and 2, openness has negative but statistically significant impact on gross domestic product in Nigeria, at lag 1. Exchange rate has negative and statistically insignificant impact on gross domestic product at lag 1, 2 and 3. Based on the long run coefficient foreign direct investment indicated positive and statistically significant effect on gross domestic product, openness has positive and statistically significant effect on gross domestic product, exchange rate has positive and statistically significant effects on gross domestic product in Nigeria in the long run. The ECT coefficient is -0.539501 and significant at 5%, this indicates that at 53.95% of the disequilibrium due to the shock in the previous years is adjusted back to the long run equilibrium in the current year. The study recommends that government should create a sound and conducive business environment in order to attract foreign investors to the country.

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