

Research Article

## Foreign Direct Investment and Nigerian Economic Growth

Ireti Olamide Olasehinde<sup>1</sup>& Clement Folorunso Ajayi<sup>2</sup>

### Abstract

This paper examined the relationship between foreign direct investment (FDI) and economic growth (GDP) in Nigeria between 1981 and 2020, using Autoregressive Distributed Lag Bound technique (ARDL). From the findings, there existed a long-run significant relationship among the variables employed. Foreign direct investment (FDI) and real exchange rates (REXCR) showed positive significant short, and long-run impacts on economic growth (GDP) which is aligned with Abu (2013) and John (2016). While interest rates and trade openness have insignificant short and long-run impacts on the economic growth. The Pairwise Granger Causality exhibited bidirectional causality between foreign direct investment (FDI) and economic growth (GDP), demonstrating the influence of these two variables on each other, as supported by Mounir & Atef (2018). It is therefore recommended that government should introduce new approach to foreign direct investment by supporting with zero-interest loan and credit facilities for it to have better significant impacts on economic growth both in the short and long-run. Adequate Exportation of Nigerian products should be encouraged by export-promotion decree in order to boost trade openness to have significant impacts on the economic growth. Real Exchange rates (REXCR) should be properly controlled by monetary authorities for economic stability to maintain its significant impacts in future on Nigerian economy.

**Keyword:** Foreign Direct Investment, Economic Growth, ARDL Bound, Pairwise Granger Causality.

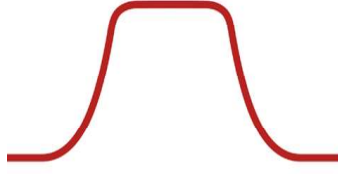
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## Arastırma Makalesi

### Doğrudan Yabancı Yatırım ve Nijerya Ekonomik Büyümesi

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#### Öz

Bu makale, 1981 ve 2020 yılları arasında Nijerya'da doğrudan yabancı yatırım (DYY) ve ekonomik büyüme (GSYİH) arasındaki ilişkiyi Otoregresif Dağıtılmış Gecikme Sınırı tekniği (ARDL) kullanarak incelemiştir. Elde edilen bulgulara göre, kullanılan değişkenler arasında uzun dönemli anlamlı bir ilişki vardır. Doğrudan yabancı sermaye yatırımı (DYY) ve reel döviz kurları (REXCR), Abu (2013) ve John'un (2016) çalışmaları ile uyumlu bir şekilde, ekonomik büyüme (GSYİH) üzerinde kısa ve uzun vadeli olumlu etkiler göstermektedir. Faiz oranları ve ticarete açıklık ekonomik büyüme üzerinde kısa ve uzun vadeli etkileri anlamlı değildir. The Pairwise Granger Causality, Mounir ve Atef (2018) tarafından desteklendiği üzere, doğrudan yabancı yatırım (DYY) ve ekonomik büyüme (GSYİH) arasındaki çift yönlü nedenselliği ortaya koyarak bu iki değişkenin birbirleri üzerindeki etkisini tespit etmiştir. Bu nedenle, hükümetin hem kısa hem de uzun vadede ekonomik büyüme üzerinde daha önemli etkilere sahip olması için sıfır faizli kredi ve kredi imkanlarıyla destekleyerek doğrudan yabancı yatırıma yeni bir yaklaşım getirmesi tavsiye edilmektedir. Ekonomik büyüme üzerinde önemli etkiler yaratacak ticari açıklığı artırmak için Nijerya ürünlerinin yeterli ihracatı, ihracat teşvik kararnamesi ile teşvik edilmelidir. Reel Döviz kurları (REXCR), Nijerya ekonomisi üzerindeki önemli etkilerini gelecekte de sürdürülebilmek ve ekonomik istikrar için para otoriteleri tarafından uygun şekilde kontrol edilmelidir.

**Anahtar Kelimeler:** Doğrudan Yabancı Yatırım, Ekonomik Büyüme, ARDL Sınırı, İkili Granger Nedensellik.

**JEL Kodlar:** G32, F14, F21

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## 1. Introduction

Investment is a driver for world economic growth and it is as germane as it incorporates transactional corporations and firms (TNCs), meaning it is a mechanism for expanding and growing the economy. It is a combination of capital, technology, marketing as well as management into business ventures, yielding returns for economic expansion (Osemene, Kolawole and Olanipekun, 2019)

Emmanuel and Ojima (2015) see investment as a change in capita stock which may either be local or foreign. It is believed that investment is an asset that is created in one way or another with the intention of allowing money put into it to yield, resulting in earning income by way of profit, or accumulation of gains. Based on the view of Emmanuel and Ojima (2015), investment is important in an economy or a country to attain some developmental goals like improving the economy, providing jobs, etc.

Foreign direct investment is indispensable especially in an emerging economy because it is crucial and across the universe, it has meaningful impacts on economic growth through jobs creation, leading to growth in people's income and to reduce the level of poverty especially in low-income countries (Adigun, 2015). In emerging economies, FDI is used to generate capital formation through diverse domestic inflow and outflow and business ventures, attracting and leading to economic growth and expansion (UNCTAD, 2019; Oyegoke and Aras, 2021).

From the economic perspective, foreign direct investment can enhance the financial expansion in both emerging and developed countries. FDI reduces risk to be encountered by investors and contributes to human and physical development, and forms the revenue base through corporate tax and other taxes (Eze, 2020; Odozi, 1998).

FDI is necessary for any economy to achieve as it motivates economic growth, because it is economically attractive. From different scholars, FDI is understood to promote global businesses because it measures the productivity of assets owned by foreign investors. FDI is needed because it gives room for global economic competition among the countries, making infant industries to be strong economically which may lead to positive impacts on the populace (Ajayi, 2006; Osemene et al., 2019).

The essence of FDI in emerging economies is for capital to be accumulated for investment, leading to diverse employment opportunities and transfer of technology within and outside the countries, which eventually contributes to economic growth and expansion (Obida and Abu, 2010; Alphonsus, 2019).

FDI is an inflow investment with involves countries' participation with joint venture, management, expertise, technology transfer, manufacturing and construction with the basic rationale for developing and expanding an economy, leading to increasing foreign reserves of the participating countries. Therefore, FDI in developing countries can be determined by market size, stable macroeconomic policies, and openness to trade, human capital, physical capital and other prospects (Abu, 2013). So, FDI is resolute to enhance and encourage foreign investors to exercise managerial control and rights over the firms in home country which set in inferiority complex among the local and foreign investors (Nwauba, 2016).

Economic growth enhances better standard of living among the populace by investing on infrastructures such as health, housing, education services, tourism, transportation and agricultural productivities (Loto, 2011). The emerging economy must grow her economy through domestic investment, human capital, technological progress, economic policies and debt overhang. These dominant concepts are interchangeably to ensure the growth and development needed in developing and developed nations are attainable respectively (Kanu, Ozurumba and Anyanwu, 2014).

In emerging economies, foreign direct investment is meant to generate capital formation through savings, diverse business ventures and that host countries enjoy foreign aids from developed countries because they are in business partnership. Now, it is understood that Nigeria is investing on oil and as a result, she has witnessed several trade policies, leading to her diversification from mono economy (oil production) to agriculture, manufacturing and construction, leading to increases in our national income and reserves (Oyegoke and Aras, 2021).

The researchers examine the relationship between foreign direct investment and financial growth in an emerging economy especially in Nigeria between 1981 and 2020. They are to find out the impacts of foreign direct investment on their economy and to ascertain the direction of causality for policy making.

## **2. Research Problem**

Some emerging countries cannot easily access foreign direct investment talk less of making use of it or implementing it. In some places, foreign direct investment cannot be initiated and developed. Economic development can be connected to growth which is enforced by the totality of the economic sectors of the economy, which entails the improvement of the life of the entire populace. It can be ascertained that there can be economic improvement in a country where there exists the establishment of useful number of jobs for employable people, increasing great income to enhance better health and to attain other basic needs.

Despite the flow of FDI in Nigeria, there is still high rate of unemployment, leading to greater level of insecurity, banditry, kidnapping etc. Until adequate economic investments are actualized, it will be difficult to achieve and measure both human and material resources (Sebel and Marx, 1987). Through the insecurity generally across Nigeria, FDI is suffering a great setback, leading to economic instability and hardship. Economic stability can never be certain possibly in a situation full of universal degradation in investment and exchange rates.

## **3. Theoretical and Empirical Literature**

In most developing countries, investment emanates from savings and one of the business ventures involved is foreign direct investment which brings interface with the Western World. Harrod-Domar theory of growth believes that savings and investment cannot be undermine in growing the economy and as a result, this paper is anchored on it. From this theory, low capital-output ratio must be obtainable to regulate profitable evolution of the countries in the universe. The major obstacle to growth as indicated by Harrod-Domar is low capital formation and when a country is experiencing low capital formation, it amounts to low savings-investment. Now, the theory of investment is based on three (3) integrated concepts such as, theory of international capital market, theory of firm and theory of international trade. Thus, it is necessary to specify that foreign direct investment has two economic perspectives which cannot be underestimated in growing the

economy; the macroeconomic and the microeconomic views. (Popovici and Calin, 2014. & Makoni, 2015).

Abu (2013) studied the relationship between FDI and Nigerian economy between 2000 and 2010, a time-lag of 11 years, using secondary data. The study showed that FDI had positive contribution on Nigerian economy between the time-lag used. From the findings of Abu's research, it was exhibited that exchange rate, exports and external reserves had positive effects on economic growth, but balance of payment and foreign trade had negative effects on the GDP. Anyway, these findings are not fit to match the present questions on the study.

Emmanuel (2016) in his study 'effect of foreign direct investment on economic growth in Nigeria between 1981 and 2015', used multiple regression technique to achieve the objective. Then, the findings of the research showed FDI had positive significant effect on Nigerian economic growth within the time-lag of 36 years used, while interest rate had insignificant effect on gross domestic product.

John (2016) published the effect of Foreign Direct Investment on Nigerian economy, within the time-lag of 35 years (1981 – 2015) where he used multiple regression techniques. From the findings, FDI in Nigeria had positive significant effect on Nigerian economy, and exchange rate had insignificant effect on GDP during the time-lag.

Ali and Hussain (2017) ascertained the impact of FDI on Pakistan economy which spanned between 1991 and 2015, using correlation and regression analysis techniques. From their research findings, foreign direct investment showed positive impact on the economic growth in Pakistan within 1991 and 2015 which was a plus to the populace.

Abdul, Nor and Abdul (2017) examined the role of FDI inflow on sustainable development of Singapore between 1970 and 2013, using ARDL estimation technique. Based on their findings, trade openness (TO) enhanced higher economic growth but amounted environmental degradation. Financial development (FD) showed significant impact on the economic, leading to the income equality among the populace.

Hyungsun and Miguel (2017) studied the relationship between inflows of FDI and foreign stock on income distribution for seven (7) Southeast Asia countries, using Panel FMOLS for data between 1990 and 2013. Their findings discovered that higher FDI inflows have worsened distribution of income in Southeast Asia. Then, FDI stock was found to be significant and the outcome of trade and GDP per capital were insignificant to their economies.

Sunde (2017) investigated the relationships among FDI, exports and economic growth in South Africa between 1990 and 2014, using ECM and VECM. It was exhibited that FDI and exports led to positive impact on economy of South Africa, which confirmed that FDI enhanced economic upward as well as export leading to economic expansion. Also, unidirectional causality was established between gross domestic products which indicated causal effect from FDI to economic growth in Nigeria. Therefore, the findings gave more insights to policy makers for economic planning.

Olagbaju and Akinlo (2018) examined the FDI and economic growth relationship in Sub-Saharan Africa (SSA), using panel data econometric techniques between 1989 and 2013. They examined the effect of FDI on economic growth, and the relationship between FDI and financial development on economic growth in SSA. They found that FDI did not impact economic growth in SSA within

the time series used, and secondly the findings showed the existence of causal relationship between banking in the low Sub-Saharan Africa (SSA).

Mounir and Atef (2018) investigated the causality among domestic capital investment, foreign direct investment and economic growth in Saudi Arabia between 1970 and 2015. They employed ARDL bound test, Full Modified Ordinary Least Squares (FMOLS), dynamic ordinary least square (DOLS) and the Canonical Cointegrating Regression to discover negative bi-directional causality between non-oil GDP growth and FDI, and between non-oil GDP growth and domestic capital investors. Therefore, foreign direct investment had adverse effects on domestic capital investment, while domestic capital investment also had inverse effects on foreign direct investment.

Sayef, Mohamed, and Abdelhafidh (2018) examined the linkages between foreign direct investment, and Nigerian economy between 1981 and 2015, using the VECM. From the findings, no relationship was established among the variables used. From the study, imports granger caused Nigerian economy and investment, while export granger caused labour, and labour eventually granger caused FDI within the time-lag used for the study.

Eze (2020) examined foreign direct investment and national growth in Nigeria, using primary and secondary data to achieve the objective set for the time series from 1983 – 2003 based on Taro Yamani's formula, Pearson product moment correlation coefficient, Chi-square and ANOVA approach. The findings discovered a decline in oil prices and increased government expenditure, leading to economic instability in Nigeria within the time series of the study. And, it was realized that reduction in foreign direct investment and related matters constituted to financial predicaments in Nigeria.

Giwa, Goerge, Okodua and Adeniran (2020) examined the effects of FDI on Nigerian real gross domestic products (RGDP) between 1981 and 2017, using the robust GMM technique. The study established that quality of labour exhibited significant impacts on RGDP while the use of capital demonstrated negative effects on RGDP in Nigeria within the time series used. Therefore, the external inflows could help to achieve the goals for enhancing emerging economy.

Darazo and Adaramola (2021) examined international trade and Nigerian economy between 1981 and 2018, using ARDL estimation technique. From the findings, exports showed insignificant impacts on economic growth among other variables like import, Foreign Direct Investment and exchange rate. Also, it was disclosed that import had insignificant impact on economic growth. Then, the study concluded that foreign exchange exhibited insignificant impact on Nigerian economy.

This paper contributes to knowledge by providing essential information on FDI and economic growth between 1981 and 2020 which can be relevant to the generality of the society for economic decision, policy making and planning.

#### **4. Model specification**

This paper is anchored on Harrod-Domar growth model and is aligned with the works of Popovici and Calin (2014) and Makoni (2015).

$$\mathbf{GDP = f (FDI, INTR, REXCR, TOP) \dots\dots\dots equ.1}$$

Where;

GDP = Gross domestic product

FDI = Foreign direct investment

INTR = Proxy by real Interest rate

REXCR = Real exchange rates

TOP = Trade openness

Linearizing equation (1), it gives:

$$\mathbf{GDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 INTR_t + \beta_3 REXCR_t + \beta_4 TOP_t + \mu_t \dots\dots\dots equ.2}$$

$\beta_0$  = constant

$\beta_1$ – $\beta_4$  = Coefficient of explanatory variables.

The estimation technique for this study is Autoregressive which will be used to establish the long-run relationship in the study. To ascertain the stationarity of the variables employed, the researchers will employ Philip-Peron Unit Root tests.

The following equations would display ARDL model for the study;

$$\mathbf{GDP_t = \alpha + \beta(L)GDP_t + \sum_{x=0}^k (\phi s) FDI_{t-x} + \sum_{x=0}^k (\gamma s) INTR_{t-x} + \sum_{x=0}^k (\delta s) REXCR_{t-x} + \sum_{x=0}^k (\theta s) TOP_{t-x} + u_t \dots\dots\dots equ.3}$$

$\alpha$  = constant intercept

$\beta$  = coefficient of lag of GDP

$\phi$  = coefficient of FDI

$\gamma$  = coefficient of INTR

$\delta$  = coefficient of REXCR

$\theta$  = coefficient of TOP

## 5. Analysis of Results and Interpretation

**Table 1: Descriptive Statistic**

	GDP	FDI	INTR	REXCR	TOP
Mean	196.1848	2.512250	0.447500	100.7608	47.07050
Median	101.0000	1.610000	4.325000	106.4650	33.95000
Maximum	546.6800	8.840000	18.18000	358.8100	633.5900
Minimum	27.75000	0.190000	-65.86000	0.620000	9.140000
Std. Dev.	169.4005	2.565050	14.43531	100.7272	95.91298
Skewness	0.689709	1.168582	-2.685489	0.888724	5.925627
Kurtosis	1.889585	3.155759	12.61239	2.994807	36.77905
Jarque-Bera Probability	5.226357 0.073301	9.144332 0.010336	202.0757 0.000000	5.265578 0.071878	2135.794 0.000000
Sum	7847.390	100.4900	17.90000	4030.430	1882.820
Sum Sq. Dev.	1119164.	256.5997	8126.753	395692.5	358772.7
Observations	40	40	40	40	40

Source: Authors' Computation

This Table examined the nature of the data distribution. From the results, the value of the highest mean is 196.1848 for gross domestic product (GDP) and the lowest mean value is 0.447500 for interest rates (INTR). The standard deviation is all of positive values which ranged from 2.565059 (FDI) to 169.4005 (FDI). It is indicated that GDP and real exchange rates (REXCR) have normal skewness of zero, while INTR has a negative skewness value below the normal skewness value.

The estimated values of kurtosis for showed that FDI has normal kurtosis of 3 whereas INTR and TOP are having values greater than 3 indicating they are leptokurtic, while GDP and REXCR have lesser than 3 showing they are platokurtic.

The Jarque-Bera measures the normality of the variables and it is revealed from the p-value of the Jarque-Bera that GDP and EXCR are normally distributed among the variables employed because they have p-value which exceeds 5% level of significance.



**Table 2: Lag order of selection**

Lag.	LogL.	LR.	FPE.	AIC.	SC.	HQ.
0	-849.8228	NA	2.90e+14	47.49016	47.71009	47.56692
1	-698.0900	252.8880	2.58e+11	40.44945	41.76904*	40.91002*
2	-668.4583	41.15512*	2.17e+11*	40.19213*	42.61139	41.03652
3	-655.7125	14.16207	5.41e+11	40.87291	44.39185	42.10112
4	-623.7083	26.67017	6.10e+11	40.48379	45.10239	42.09581

Source: Authors' Computation

Table 2 displayed the lag order selection to identify the best lag suitable for the distribution. Anyway, Akaike Information Criterion (40.19213) is at lag 2 while Schwarz Information Criterion (41.76904) and Hannan-Quinu Information Criterion (40.91002) are at lag 1 which are best for the analysis of the variables used. Thus, Akaike information criterion (AIC) of lag 2 was made use in this work.

**Table 3: Augmented Dickey-fuller Test**

VARIABLES	Stationarity at level		Stationarity at 1 <sup>st</sup> difference		I(d)
	Stat	5% C.V	Stat	5% C.V	
GDP	0.8710	-2.941145	-3.935607	-2.941145	I(1)
FDI	-1.543320	-2.938987	-7.326239	-2.941145	I(1)
INTR	-7.326239	-2.941145			I(0)
REXCR	2.168911	-2.938987	-4.120453	-2.941145	I(1)
TOP	-6.234028	-2.938987			I(0)

Source: Authors' Computation

**Table 4: Philips-Peron (PP) Test**

VARIABLE	Stationarity at level		Stationarity at 1 <sup>st</sup> difference		I(d)
	Stat	5% C.V	Stat	5% C.V	
GDP	-0.191914	-3.938987	-3.936620	-2.941145	I(1)
FDI	-1.473039	-2.938987	-7.284090	-2.941145	I(1)
INTR	-6.999030	-2.938987			I(0)
REXCR	2.0366790	-2.938987	-4.066658	-2.941145	I(1)
TOP	-6.234052	-2.938987			I(0)

Source: Authors' Computation.

Tables 3 and 4 showed both Augmented Dickey-fuller and Philip-Peron tests. From these results, interest rates (INTR) and trade openness (TOP) attained their stationarity at levels I(0), while all other variables like gross domestic growth (GDP), foreign direct investment (FDI), and real exchange rates (REXCR) attained their stationarity at first difference in both techniques. Based on the results, ARDL technique would be suitable to examine long-run relationship.

**Table 5: Autoregressive Distributed Lag Test**

Ho: No long-run relationship exists

T-STAT	VALUE	K
F-STAT	7.754431	4
CRITICAL VALUE BOUNDS		
LEVEL OF SIGNIFICANCE	I(0) BOUND	I(1) BOUND
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Authors' Computation

Table 5 exhibited that f-statistics is 7.754431 while the critical bound values at upper bound are 3.52, 4.01, 4.49, and 5.06 at 10%, 5%, 2.5% and 1% levels of significance. It is obvious that the f-statistic value (7.754431) is exceeds all the values in upper bound. As a result, the alternative hypothesis (H1) would be accepted, i.e., there is long-run relationship in the analysis.

**Table 6: ARDL estimation outcomes**

VARIABLE	SHORT-RUN			
	COEF	STANDARD ERROR	t-STAT	P-VALUE
GDP				
D(FDI)	9.623467	3.235235	2.974581	0.0061
D(INTR)	-0.060888	0.400038	-0.152204	0.8802
D(REXCR)	0.210795	0.080107	2.631425	0.0139
D(TOP)	0.070445	0.045498	1.548286	0.1332
CointEq(-1)	-0.183611	0.022989	-7.987058	0.0000
VARIABLE	LONG-RUN			
	COEF	STANDARD ERROR	t-STAT	P-VALUE
GDP				
FDI	52.41218	11.89328	4.406875	0.0001
INTR	-0.331612	2.204064	-0.150455	0.8815
REXCR	1.148052	0.374435	3.066093	0.0049
TOP	3.182927	2.645055	1.203355	0.2393
R-squared = 0.989271		Probability (F-stat) = 0.000000		

Source: Authors' Computation.

Table 6 showed ARDL short-run estimation. With regards to the short-run, the results indicated that FDI and real exchange rates (REXCR) exhibited positive significant short-run relationship and impact on the economic growth (GDP), while interest rates (INTR) and trade openness (TOP) had insignificant relationship with Nigerian economy.

From the long-run, FDI and real exchange rates (REXCR) are statistically significant, having positive impacts on GDP, while interest rates (INTR) and trade openness (TOP) showed insignificant impacts on GDP. The error correction term showed a long-run causality between the GDP and FDI, INTR, REXCR, TOP. Then, the cointegration equation (-0.183611) indicated that as the independent variables are reducing, the dependent variable tends to decrease and that the previous year error will be corrected at the current year with an adjustment speed of 18.36%.

**Table 7: Serial Correlation**

H0: No serial correlation.

F-stat	2.052028	Prob F(4,30)	0.1122
Obs*R-squared	8.378230	Prob. Chi-sqaure (2)	0.0787

Source: Authors' Computation.

Table 7 showed the f-statistic value of 2.052028, the p-value is 0.1122 and the value of probability Chi-square is 0.0787 which exceeds 5% level of significance. As a result, serial correlation is accepted for the data. Thus, the model used is reliable for making inferences and valid for policy recommendations.

**Table 8: Heteroskedasticity Test**

H0: Homoskedasticity exists

F-stat	0.818797	Prob F(4, 35)	0.5220
Obs*R-squared	3.422779	Prob. Chi-sqaure (4)	0.4899
Scaled explained SS	3.993739	Prob. Chi-Square (4)	0.4069

Source: Authors' Computation

Table 8 showed the f-statistic value of 0.818797, probability value of 0.5220 and aftermath the probability Chi-square is 0.4899, which exceeds 5% level of significance. As a result, homoskedasticity is accepted, meaning the model is homoscedastic.

**Table 9: Granger Causality**

Sample: 1981 – 2020				
Lags: 2				
Null hypothesis	Obs.	F-statistic	Probability	Direction of causality
FDI does not granger Cause GDP	38	4.11156	0.0254	Bicausality
GDP does not granger Cause FDI		4.44755	0.0195	
INTR does not granger Cause GDP	38	0.39312	0.8781	No causality
GDP does not granger Cause INTR		2.59945	0.0895	
REXCR does not granger Cause GDP	38	2.94808	0.0664	No causality
GDP does not granger Cause REXCR		1.99581	0.1520	
TOP does not granger Cause GDP	38	1.79755	0.1816	No causality
GDP does not granger Cause TOP		1.03210	0.3675	
INTR does not granger Cause FDI	38	0.31085	0.7349	No causality
FDI does not granger Cause INTR		0.93583	0.4024	
REXCR does not granger Cause FDI	38	2.14284	0.1334	No causality
FDI does not granger Cause REXCR		0.31700	0.7305	
TOP does not granger cause FDI	38	0.94688	0.1334	No causality
FDI does not granger cause TOP		0.83489	0.4429	
REXCR does not granger cause INTR	38	1.26992	0.2942	No causality
INTR does not granger cause REXCR		1.50416	0.2370	
TOP does not granger cause INTR	38	0.07378	0.9290	No causality
INTR does not granger cause TOP		0.18321	0.8334	
TOP does not granger cause REXCR	38	2.24212	0.1222	Unicausality
REXCR does not granger cause TOP		7.67133	0.0018	

Source: Authors' Computation, 2020.

Table 9 indicated the granger causality between variables, whereby it is obvious that there bidirectional causality is established between FDI and economic growth within the specified period (1981-2020). The results exhibited that unicausality is established between trade openness (TOP)

and real exchange rates (REXCR) whereby it is real exchange rates that granger caused trade openness. Thus, no causality was established between interest rates and GDP; real exchange rates and GDP; trade openness and GDP; interest rates and FDI; real exchange rates and FDI; trade openness and FDI; REXCR and INTR; trade openness and interest rates.

## **6. Conclusion and Recommendations**

Having studied the relationship between FDI and economic growth in Nigeria between 1981 and 2020, the researchers exhibited long-run significant relationship among the variables employed. From the analysis, foreign direct investment (FDI) and real exchange rates (REXCR) have significant relationship and impact on GDP as aligned with results of Abu (2013). But, interest rate (INTR) and trade openness have insignificant impacts on economic growth in Nigeria. FDI and real exchange rates (REXCR) have positive relationship and impacts on Nigerian economy, while INTR have insignificant impact in Nigeria. The error correction term, having coefficient (-0.0183611) with p-value (0.000), indicated a long-run causality between dependent variable and independent variables. There existed bidirectional causality between foreign direct investment (FDI) and GDP, which is supported by Sunde (2017) and Arror (1962). Therefore, it is recommended that government should encourage more foreign direct investment by giving zero interest credit facilities to the investors. Exports of Nigerian products should necessitate export-promotion to have significant impacts on the economic growth. Real Exchange rates (REXCR) should be properly controlled by monetary authorities for economic stability to maintain its significant impacts in future on Nigerian economy. Importantly, government should encourage Nigerians to engage in domestic investment, leading to impress foreign direct investment, granting her investors opportunity for soft loan, zero interest loan and grants for diverse business ventures which can promote and enhance foreign investment to grow the economic.

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## Appendix

YEAR	RGDP (\$B)	FDI (\$B)	REXCR (₪)	INTR (%)	TOP
1981	164.48	0.54	0.62	-65.86	16.17
1982	142.77	0.43	0.67	-4.59	13.78
1983	97.09	0.36	0.72	-8.02	10.04
1984	73.48	0.19	0.77	4.34	9.38
1985	73.75	0.49	0.89	2.34	10.39
1986	54.81	0.19	1.76	4.31	9.14
1987	52.68	0.61	4.02	-4.77	19.50
1988	49.65	0.38	4.54	-2.96	16.94
1989	44.00	1.88	7.37	-6.12	34.18
1990	54.04	0.59	8.04	17.47	30.92
1991	49.12	0.71	9.91	0.99	37.02
1992	47.79	0.90	17.30	-14.99	38.23
1993	27.75	1.35	22.07	-7.05	33.72
1994	33.83	1.96	22.00	-15.92	23.06
1995	44.06	0.34	21.90	-31.45	39.53
1996	51.08	0.50	21.88	-5.26	40.26
1997	54.46	0.47	21.89	12.13	51.46
1998	54.60	0.30	21.89	11.49	39.28
1999	59.37	1.00	92.34	6.05	34.46
2000	69.45	1.14	101.70	-1.14	49.00
2001	74.03	1.19	111.23	12.14	49.68
2002	95.39	1.87	120.58	3.02	40.04
2003	104.91	2.01	129.22	9.94	49.33
2004	136.39	1.87	132.89	-2.61	31.90
2005	176.13	4.98	131.27	-1.59	33.06
2006	236.10	4.85	128.65	-5.63	42.57
2007	275.63	6.04	125.81	9.19	39.34
2008	337.04	8.19	118.57	6.69	40.80
2009	291.88	8.56	148.88	18.18	36.06
2010	361.46	6.03	150.30	1.07	43.32
2011	404.50	8.84	153.86	5.69	53.28
2012	455.50	7.07	157.50	6.23	44.53
2013	508.69	5.56	157.31	11.20	31.05
2014	546.68	4.69	158.55	11.36	30.89
2015	486.80	3.06	192.44	13.60	21.45
2016	404.65	3.45	253.49	6.69	20.72
2017	375.75	2.41	305.79	5.79	26.35
2018	397.19	0.78	306.08	6.06	33.00
2019	448.12	2.31	306.92	4.52	633.59
2020	432.29	2.4	358.81	5.37	25.4